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6. AUTHOR(S)

Robert F. Cande

M. Tracy Oates

Robert H. Lafferty

James Barnes

Michael C. Sierzchula

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

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From 8 March through 12 March, 1989, MCRA conducted an archaeological survey of 592 acres of right-of-way along Steele Bypass Ditch, New Franklin Ditch, and Main Ditch in Pemiscot Co., MO. On April 1, 1990, five more sites, 23PM574, 23PM575, 23PM576, 23PM577, and 23PM578 were recorded

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A CULTURAL RESOURCES SURVEY
OF STEELE, NEW FRANKLIN, AND MAIN DITCHES, AND
NATIONAL REGISTER OF HISTORIC PLACES SIGNIFICANCE TESTING
OF SITES 2PM574, 575, 577, AND 23PM578,
PEMISCOT COUNTY, MISSOURI

by

Robert F. Cande
Robert H. Lafferty, III
Michael C. Sierzchula
M. Tracy Oates
and
James Barnes



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RESEARCH ASSOCIATES

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ABSTRACT

From March 8 through 12, 1989, MCRA conducted an archeological survey of 592 acres of right-of-way along Steele Bypass Ditch, New Franklin Ditch, and Main Ditch in Pemiscot County, Missouri. On April 1, 1990, six more acres were included in the survey. Five archeological sites, 23PM574, 23PM575, 23PM576, 23PM577, 23PM578, were recorded. Between April 4 and June 4, 1989, four sites, 23PM574, 23PM575, 23PM577, and 23PM578 were tested to determine their eligibility for nomination to the National Register of Historic Places. Additional testing was conducted on January 14-15, 1990 at sites 23PM574, 575, and 578. 23PM574, 23PM577 and 23PM578 are not considered eligible for nomination to the National Register. No further work is recommended at these sites. Investigations at 23PM575 indicated that it represents a component that has either been covered by ditch spoil, or is a buried deposit disturbed by ditch construction. It is recommended that the site area be avoided in all future ditch and levee construction. 23PM576 was determined to be out of the project area and was not investigated during the testing phase.

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CHAPTER 1

INTRODUCTION, ENVIRONMENT AND ARCHEOLOGICAL BACKGROUND

by

Robert H. Lafferty III

and

Robert F. Cande

In March, 1989, Mid-Continental Research Associates, Inc. (MCRA) conducted a cultural resources survey of 592 acres of right-of-way along Steele Bypass Ditch, New Franklin Ditch, and Main Ditch in Pemiscot County, Missouri. On April 1, 1990, six more acres were surveyed. This work was done for the Memphis District Corps of Engineers in accordance with Delivery Order Number 1 of Contract No. DACW66-89-D-0053 to place the Corps in compliance with the Archeological Resources Protection Act (1976) and other pertinent laws and regulations.

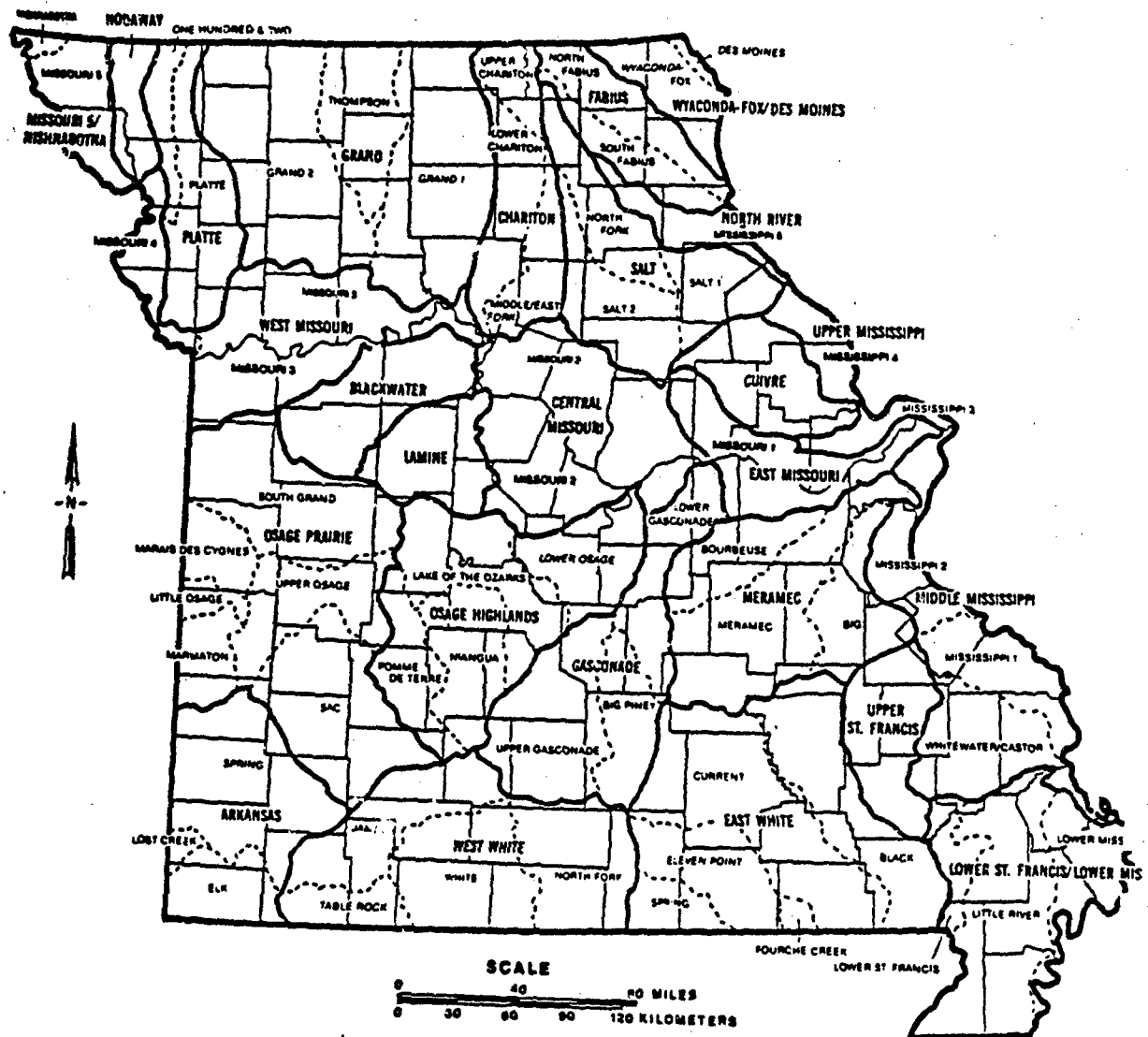
Between March and June, four of the five discovered sites were tested for significance and eligibility according to National Register of Historic Places' criteria. The fifth site was determined to be outside of the impact zone and was not tested. In January, 1990, additional testing was conducted on three sites which the State Historic Preservation Officer considered inadequately tested.

Constraints

The survey was constrained by heavy spring rains which made it difficult to find a dry enough time to get to the field. Mud, a consequence of the heavy rain, slowed the survey. Furthermore, site testing was delayed three times by heavy rains, putting the project behind schedule.

Field Personnel

The survey was conducted by Michael C. Sierzchula, M. Tracy Oates, and Tim Mulvihill between March 8-11, 1989. Testing was not conducted at this time because of rain after the survey was completed. The first sites were tested on March 28 by Robert H. Lafferty III, Brady Lindsey, and Walter Hatfield, and Mulvihill. Again work was terminated due to rain which made the fields totally intractable. In April we again tried to test the sites but were rained out when we got to the field, after first having conducted survey in the New Madrid Floodway. On May 18-20, R. F. Cande assisted by Robin Lair and Joe Giliberti succeeded in testing the last sites. Sites 23PM574, 575, and 578 had



Study Units and Watersheds

— PRINCIPAL DRAINAGE BASINS
 - - - WATERSHEDS

Figure 1. Missouri watershed map (from Wright 1987).

additional testing conducted by M. Tracy Oates and Carol Kretzmann on January 21-22, 1990. The April 1, 1990 survey was conducted by Lafferty, Sierzchula, Oates, and Cande.

PHYSIOGRAPHIC ENVIRONMENT

The project area is located in the Eastern Lowland Physiographic region which is part of the Central Mississippi River Valley (Figure 2; Morse and Morse 1983). This portion of the Mississippi River Valley is a deeply incised canyon, known as the Mississippian Embayment, which has alluviated since the beginning of the Holocene. The valley is 80 miles wide at the project area and is divided roughly in half by Crowley's Ridge (Medford 1972:69).

The project area is in the Left Hand Chute of the Little River which is part of the St. Francis Basin (cf. Dekin et al. 1978). Until swamp drainage, much of the project area was a swamp and was seasonally inundated. The New Franklin Ditch drains the central part of the Mississippi River Backswamp, while Steele Bypass channelizes water across a slightly higher area on which the Iron Mountain Railroad was situated.

The Mississippi River has structured the environment, first by carving this great valley and, more recently, by depositing nearly a mile of silt within the valley's confining rock walls. The deposited alluvium is mostly stone-free, with sands deposited in the relict braided surface and the alluvial levees as its largest common sediment. This has resulted in the formation of some of the world's best and most extensive agricultural land with virtually no hard rocks or minerals. Prehistorically, and even today, rocks and minerals had to be imported from surrounding regions.

The Mississippi River has also structured, and continues to structure, the transportation environment. The dominant direction of the river's movement from north to south has made resources upstream more accessible than those to the east or, especially, to the west. For example, to reach the Ozarks one must traverse three major rivers; the St. Francis, the Cache and the Black, all former channels of the Mississippi River in post-Pleistocene times. In pre-automobile times this was a tedious overland journey of 80 miles, which involved crossing many smaller bodies of water. This contrasts with 100 miles of floating downhill on the surface of the river. The river is still a major transportation artery for the central part of the continent and in earlier times was the only way to traverse easily this lowland region. In the 1840-1843 period, when the General Land Office (GLO) maps were made, all of the mapped settlements in the project area were positioned along the river.

The Central Mississippi River Valley is incised into the Ozark and Cumberland Plateaus. These coordinate proveniences were uplifted from the south by a tectonic plate movement from the southeast which pushed up the Ouachita Mountains and split the lower part of the Ozark-Cumberland Plateau. At the time of this tectonic event, ca. 100 million years ago, these plateaus were inland seas with beach lines along the present course of the Boston Mountains in Central Arkansas and Sand Mountain/Walden Ridge in Alabama and Tennessee. These ancient sea beds today are limestone filled with many different kinds of cherts. Identification of these cherts according to specific formations is difficult because of the great deal of variation within formations and because of the tendency for these formations to have different

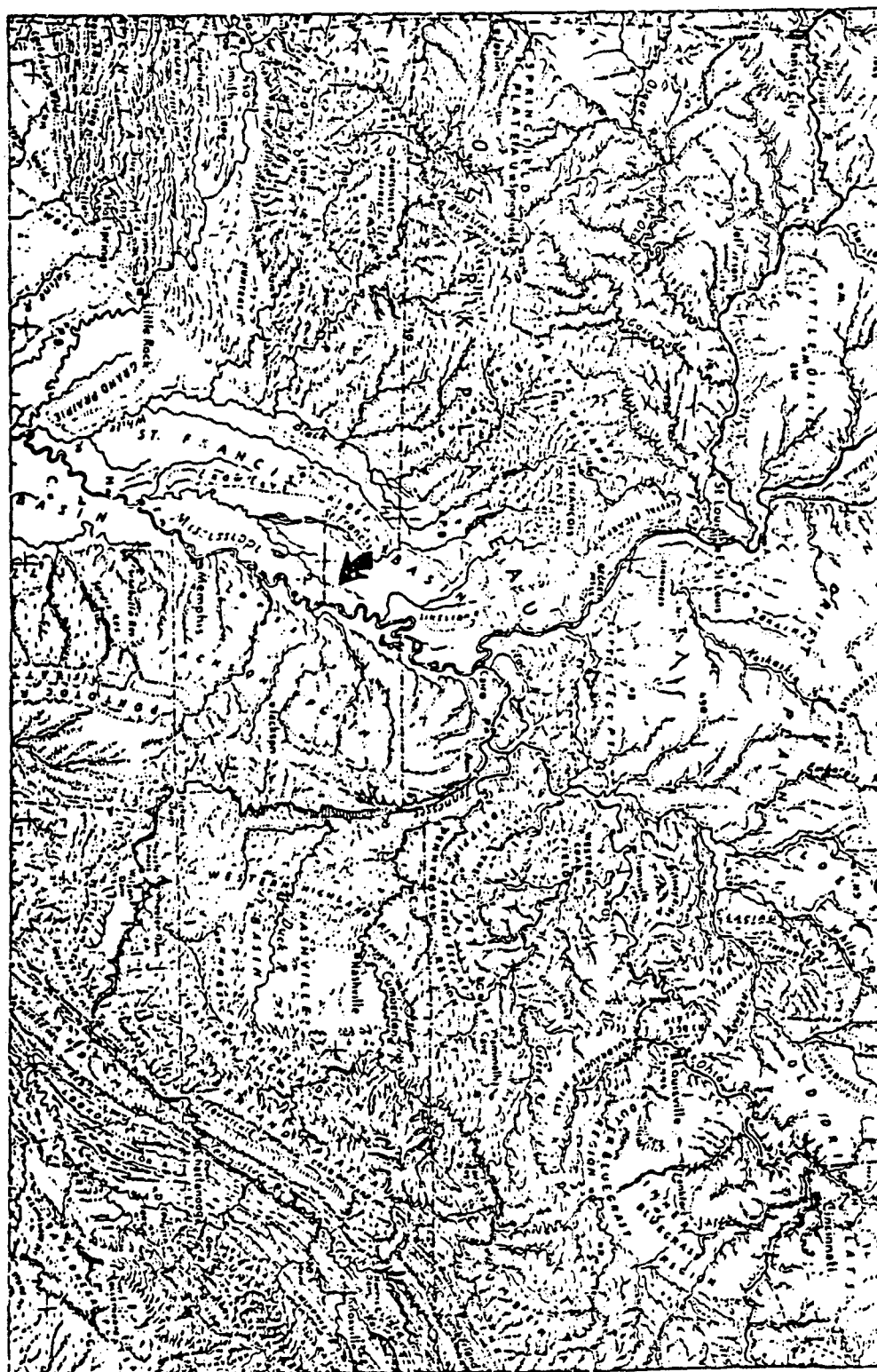


Figure 2. Central Mississippi River Valley Physiography (after Raisz 1978).

names in different states. For example, Boone, Burlington, and Fort Payne are the various names applied to the same formation in Arkansas, Missouri, and Tennessee, respectively.

Figure 3 shows the source area of some of the more important lithic resources. Some of these have well-known point sources such as Dover, Mill Creek, Crescent and Illinois Hornstone. Other lithic resources occur over large areas and do not have known quarries, though they may exist (Butler and May 1984).

Identification of these lithic resources is made even more complex by the presence of Tertiary gravel beds around the edges of the Mississippian Embayment and on Crowley's Ridge. Crowley's Ridge is perhaps the most important of these because it occurs in the center of this otherwise stoneless plain. This deposit was laid down in Pliocene times when the river gradient was steeper than it is today. Crowley's Ridge has virtually every heavy, hard kind of mineral that occurs in the Mississippi River Basin. Prehistoric sites on the edge of the western lowlands, even those situated directly on the Grand Glaise Terrace, show a marked preference for the lithics found in the Ozarks over those of the terrace (e.g. 3IN17, Lafferty et al. 1981). Most of the gravel deposits adjacent to the Mississippi Valley to the east are covered with loess deposits up to 200 feet thick.

Investigations have shown that as one approaches Crowley's Ridge from both the east and the west there is a marked increase in the occurrence of utilized cobbles (e.g. cores) on prehistoric sites (Shaw 1981). This is true even though, through time, there are documented changes in the prehistoric preferences for utilization of different lithic resources. The reason that Crowley's Ridge gravel was used throughout the prehistoric record in the Central Mississippi Valley is that it was the only locally available lithic resource (something is better than nothing), and furthermore, because almost any kind of stone could be found there. Although the gravels were not the best quality, they were adequate for most purposes. Even today, Crowley's Ridge is the main source of gravel for both the eastern and western lowlands. The rather intensive modern day use of gravel sometimes makes distinction among aboriginal tools (such as scrapers and flake knives), "gravel crusher-produced artifacts", and transported artifacts difficult.

One important class of lithic resources was volcanic materials, particularly the basalts, which were obtained in the St. Francis Mountains and used for axes, chisels, and celts. Rhyolite and orthoquartzite, likewise, were used for various tools.

The Mississippi River has been the sole agent in structuring its valley and has greatly influenced the development of transportation routes. When De Soto and his men reached the Great River in 1541, they gazed on a transportation artery that stretched from the Gulf of Mexico (and beyond) into the heart of the continent. However, the river was navigated and controlled by fleets of dugout canoes that were both to harass and to assist the Spanish over the next several years. As the conquistadors looked from the bluffs overlooking the virgin forest-covered swamps, they never suspected they were beholding both the graveyard and the salvation of their expedition. During the next two months the Spaniards would slog through one of the most difficult swamps encountered on their entire expedition, the St. Francis Sunk Lands (Morse 1981; Hudson 1984). The expedition was continually drawn back to the Great

River and high chiefdom cultures, which they dominated using the techniques learned against the Aztecs and the Inca. Swampy lowlands impeded the expedition, especially when traversing from east to west. When the explorers reached the Grand Glaise terraces on the Ozark Escarpment, they encountered the great Toltec-Cahokia Road (later known as the Natchitoches Trace, then the southwest Military Road, and currently U.S. Highway 67). This important road, on tractable ground with the swampy lowlands to the east and the more dissected plateau to the west allowed the expedition to double its speed (Hudson 1984, Akridge 1986). Finally, after many side trips and high adventures, the hard-pressed expedition made its escape down the Great River in boats constructed with nails forged from their weapons. Even so, they were harassed by Indians in large fleets of canoes all the way to the Gulf of Mexico.

In summary, the physiography of the Central Mississippi River has greatly circumscribed life in this environment. Transportation was much easier, if sometimes longer, on the rivers, particularly the Mississippi. Overland travel was easiest around the lowlands or down Crowley's Ridge. People did not penetrate or live in this environment unless they were equipped with boats, lines, and other tools necessary to an aquatic environment. This lowland forest, with some of the most productive soils on the continent, was rich in plants and animals. A profusion of mineral resources was available in the nearby uplands and these minerals were widely traded from prehistoric times to the present.

PROJECT AREA PHYSIOGRAPHY

The project area has been in existence less than 10,000 years. During this time it has undergone some rather substantial changes. Such changes are documented for the Ditch 29 project, located six miles south of the project area (Guccione 1987; Guccione et al. 1987). The oldest surface in the project region is the relict braided surface, west of Big Lake, laid down in Pleistocene times by meltwater from the Wisconsin glaciation.

In early Holocene times (ca. 9,000 B. P.) the Mississippi River began its meandering regime with natural levee building near the western edge of the project area and with a massive backswamp forming between the natural levee and Big Lake. Ditches in the project area drain a large portion of this swamp. These conditions lasted until approximately 5,400 B.P. when, at the end of the dry Hypsithermal period, moisture increased. During the Hypsithermal the backswamp had aggraded as much as 6 meters.

Beginning approximately 5,000 years ago, a drainage system began to develop on the backwater swamp surface. The drainage included the Right Hand Chute of Little River at Big Lake. Pemiscot Bayou, in the southern part of the project area, developed later. Pemiscot Bayou is a crevasse channel. Crevasse channels form after a period of aggradation raises the river above the surrounding landscape. A break in the natural levee then occurs, diverting part of the river's flow to lower ground. The most recent occurrence of crevasse channel formation was the New Madrid earthquake of 1811-1812. During this event the Mississippi River flowed backwards at New Madrid. At New Madrid an upriver break in the channel siphoned water to the lower backswamps. Other processes, such as flooding can cause crevasse channels. It has only been during the last 5,000 years that the project area landscape began to approximate its modern form. Within this period of time, Pemiscot Bayou has

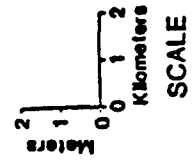
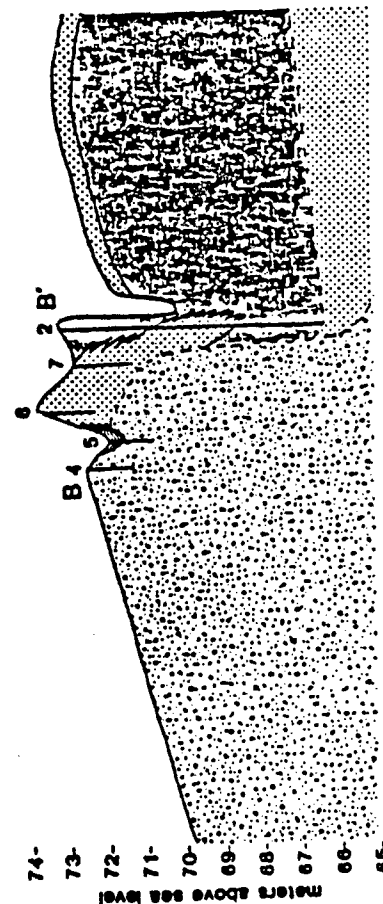
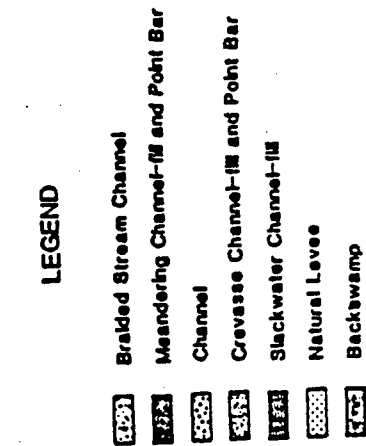
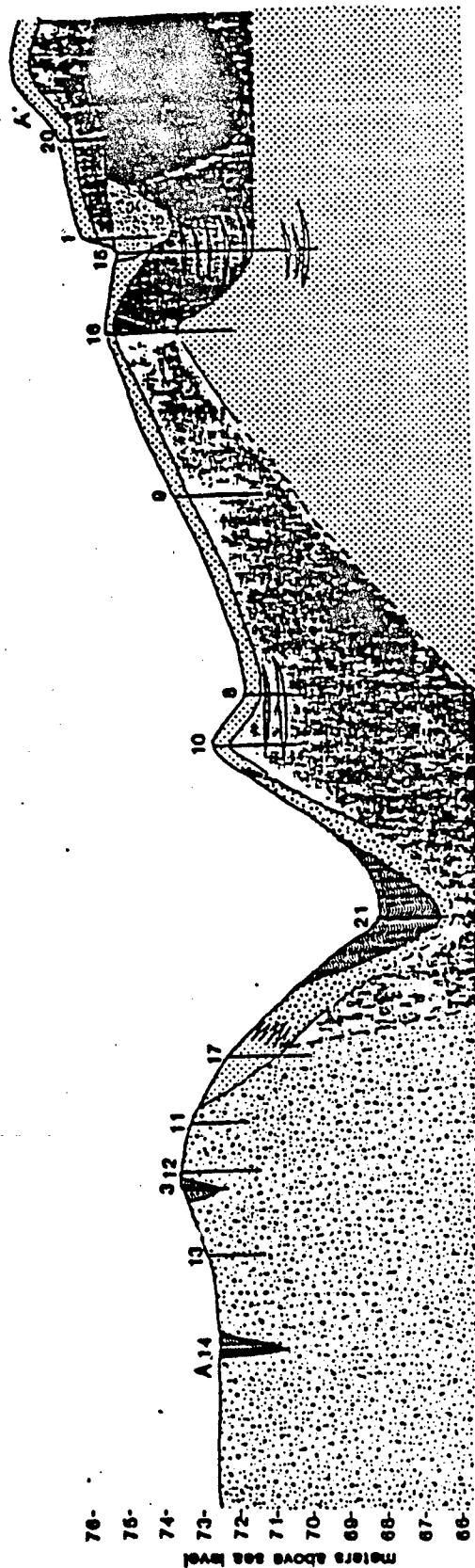


Figure 4. Cross section of the project area (after Guccione 1987:83).

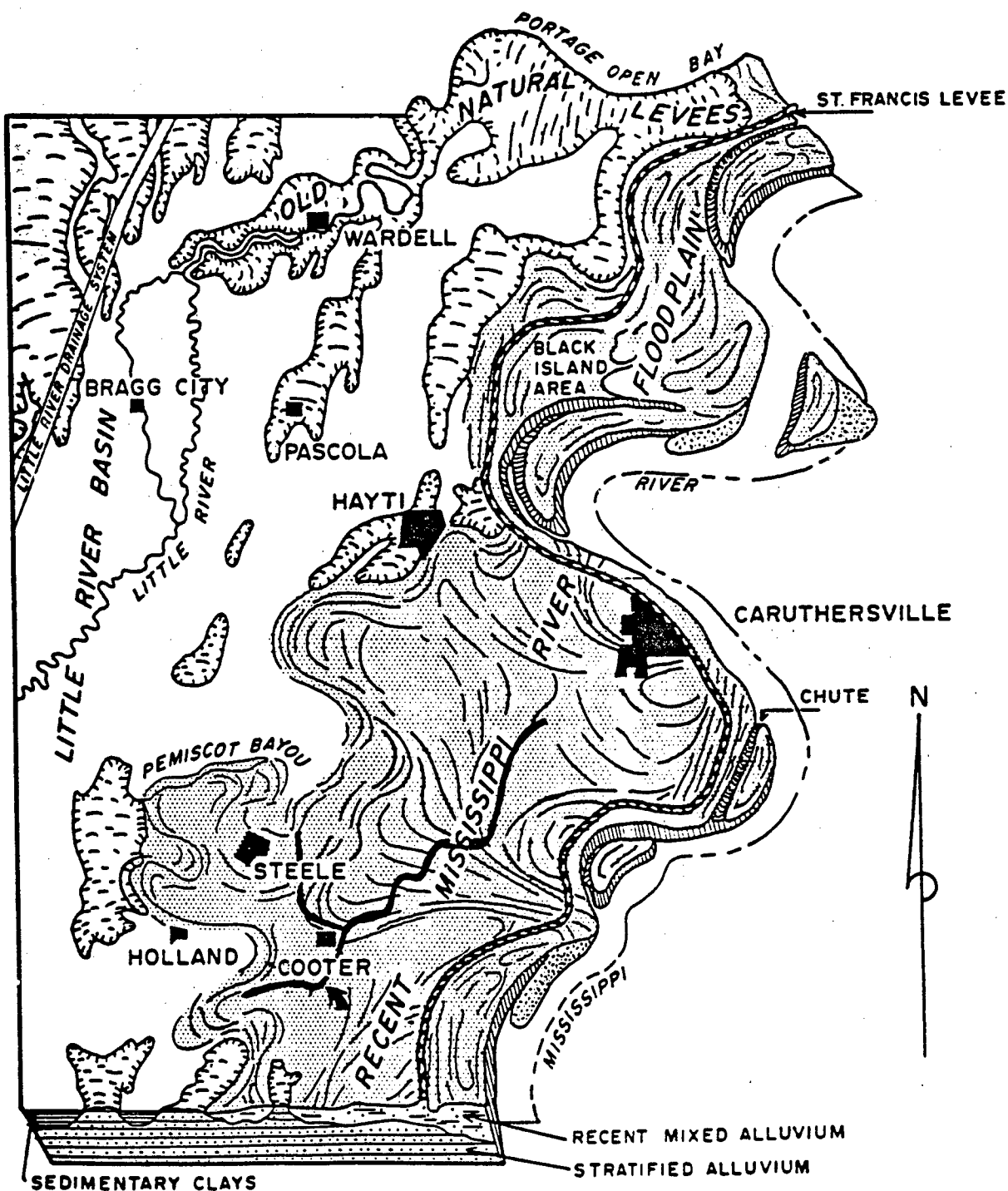


Figure 5. Major landforms in the project area (after Brown 1971).

incised its channel two to three meters deep into the backswamp and began building the levees and point bars which dominate the current landscape in the project area. During this and subsequent time a thin veneer of coarser sediments has been laid over the backwater swamp. Some time during the past 1,000 years, the Mississippi River moved about seven kilometers east of the project area and deposited the levee in the eastern part of the project area. Periodically during this time Pemiscot Bayou has been a course of part of the Mississippi River.

These events have created the modern landscape and have influenced expectations about the possible age of deposits on the different surfaces. The southern project area is dominated by point bar deposits of Pemiscot Bayou, which is not more than 5,000 years old. To the north is a poorly drained backswamp with a thin veneer of more recent silts and sands.

SOILS

Soils are the best indicators of past environments because of two characteristics of riverine bottom land: (1) the manner of deposition effectively sorts different-sized particles by elevation, and (2) relative elevation and the water table determine the kinds of biota which may inhabit a particular econiche. These relationships are well established by archeological, geological, and ecological research in the Lower Mississippi Valley (Lewis 1974; Beadles 1976; Harris 1980; Delcourt et al. 1980; King 1980).

Figure 6 presents a diagrammatic cross section of a riverine deposit. The river moves in the channel to the left. When it floods, the load capacity of the river is increased. When the river spills over its bank its velocity is immediately reduced. This lowers its load capacity, and the largest particles it is carrying are deposited. Repeated flooding gradually builds up a natural levee composed of the largest particles available - sands and silts under the current gradient. This process may be fairly rapid. For example, there are documented instances of as much as two meters of sand being deposited in one flood (Trubowitz 1984). As the levee builds up, a backswamp forms away from the river and smaller particles (clays) are deposited under more slowly flowing slackwater conditions. Under a meandering regime, the river channel will eventually be cut off, forming an oxbow lake. This will eventually fill with a clay plug. Many of these features are still directly observable on soil maps (Brown 1971) and, in a few instances, on topographic maps.

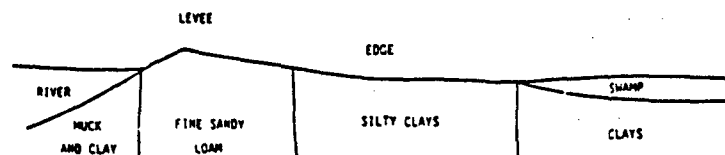


Figure 6. Depositional environments of different soil particle sizes (after Lewis 1974).

PROJECT AREA SOILS

Table 1 presents the depositional environments of the soils found in the project area as described by Brown (1971:5-22).

Two soils are associated with levee tops. These are the best drained soils in the project area. The levee soils occur in two small areas in the southern part of the project area. Both were found to have archeological sites on them. These soils were the best soils for agriculture in the predrainage landscape (Table 1).

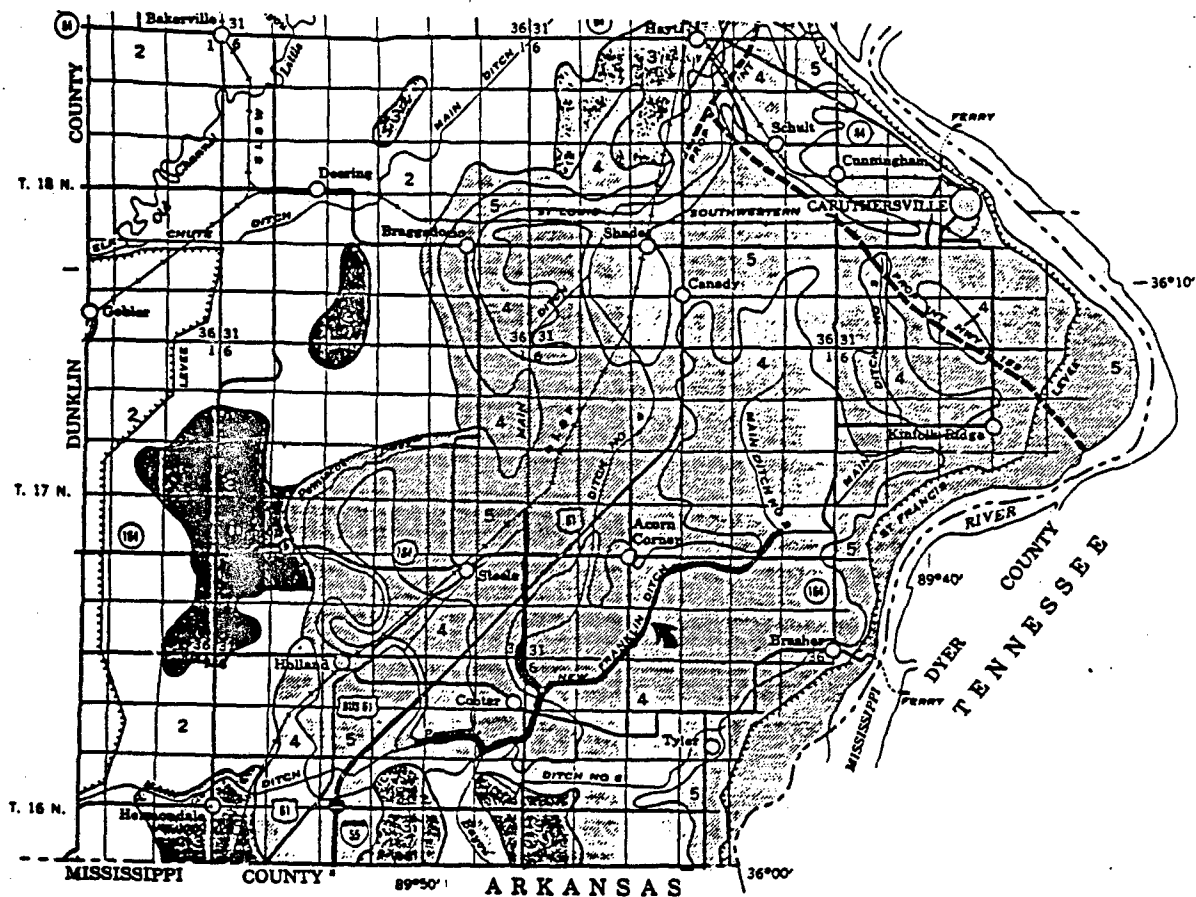
Table 1. Project Area Soils and Origins

Code	Soil Type	Percent	Levee	Ecotone	Water
Ca	Caruthersville Very Fine sandy Loam		x		
Cm	Commerce Sandy Loam		x		
Cr	Commerce Silt loam		x		
Cs	Commerce silty clay loam			x	
Ct	Cooter and Crevasse silty clay loams				x
Cw	Crevasse silt loam			x	
Hc	Hayti silty clay				x
Hy	Hayti silt clay loam				x
Po	Portageville clay				x
Pr	Portageville silt clay loam				x
Sr	Sharkey Clays				x
(after Brown 1971).					

Two soils are found on the lower parts of the natural levees which formed an ecotone (Table 1). This environment was often seasonally flooded and as the levee built up, the particle sizes increased, resulting in silts overlying clays. These are more poorly drained than the levee soils but better drained than the swamp soils.

Six soils were formed in slackwater conditions found in swamps and oxbow lakes. These are clays that cover most of the project area. These soils were inundated and not tillable in the predrainage landscape (Table 1).

The following section presents a brief description of the soil types, soil series, complexes and mapping units located within the project area. Important characteristics discussed include: depositional history, soil color and texture and drainage capabilities. The soils data are derived from the USDA Soil Survey of Mississippi County, Arkansas (Brown 1971:7-22). The distribution of specific soil types is shown in Figure 7.



SOIL ASSOCIATIONS






-  Wardell-Sharkey association: Level to very gently undulating, poorly drained soils on low natural levees in the northwestern part of the county
-  Sharkey association: Level and nearly level, poorly drained soils on the broad slack-water area of the Little River flood plain
-  Dundee association: Level to very gently undulating, somewhat poorly drained soils on old natural levees mainly along Portage Open Bay
-  Hayti-Portageville-Cooter association: Undulating to depressional, very poorly drained to moderately well drained soils on areas recently flooded by the Mississippi River
-  Commerce-Crevasse-Caruthersville association: Nearly level and very gently undulating, somewhat poorly drained to excessively drained soils on natural levees adjacent to the Mississippi River

Figure 7. Soils in the project area.

SOILS AND BIOTIC COMMUNITIES

The relationship of biota to riverine features in the Lower Mississippi Valley is well known (Lewis 1974; Lafferty 1977; Butler 1978; Morse 1981). Because of the radical changes in the environment in the past century, all of these are reconstructions based on named witness trees in the GLO survey notes. These studies have consistently identified plant communities associated with particular soil types which are diagrammatically presented in Figure 6.

There are two plant communities associated with the levees: the Sweetgum-Elm Cane Ridge forest and the Cottonwood-Sycamore Natural Levee forest. These plant communities were the driest environments in the natural landscape and had a high potential for human settlement. These two plant communities are, in fact, successional stages, with the Cottonwood-Sycamore forest being found along active river channel, and the Cane Ridge Forest on the levees of abandoned courses.

There are four aquatic biotic communities: river, lake, marsh and swamp. These low-lying areas are unsuitable for human occupation. Several of these are involved in successional sequences; however, since about the Middle Woodland period all were present at any given time, prior to drainage.

Between these two extremes are the river edge communities and the seasonal swamps. In drier times the latter contained areas suitable for occupation. The former is a line-like interface with a steep slope and little substantial flat area.

The correlation between soils and plant communities is not a 1:1 ratio. These soil deposits are building up, and what was at one time a swamp may in a few decades become a dry levee. This process brings about biotic successional changes. There is, however, a high correlation between soils and last successional stage plant communities.

Research using soils and plant communities to model prehistoric occupation in northeast Arkansas (Dekin et al. 1978; Morse 1981; Lafferty et al. 1984), in the adjacent portions of the Missouri Bootheel (Lewis 1974; Price and Price 1981), and in the lower Ohio Valley (Muller 1978; Lafferty 1977; Butler 1978) have all suggested that sites are preferentially located on levee soils and are not found in aquatic deposits.

MACROBIOTIC COMMUNITIES

These three "macrobiotic" communities - levee, ecotone, and swamp, are composed of different species of plants and animals. Table 2 presents an arboreal species composition reconstructed in Mississippi County, Missouri (Lewis 1974:19-28).

Table 2. Arboreal species composition of three biotic communities
in Mississippi County, Missouri

Species	Levee	Edge	Swamp
American Elm (<i>Ulmus</i> sp.)	23	19	
Ash (<i>Fraxinus</i> sp.)	11	14	2
Bald Cypress (<i>Taxodium distichum</i>)		7	50
Black Gum (<i>Nyssa sylvatica</i>)	T	1	
Blackhaw (<i>Viburnum</i> sp.)	T		
Black Walnut (<i>Juglans nigra</i>)	2		
Box Elder (<i>Acer negundo</i>)	2		
Cherry (<i>Prunus</i> sp.)	T		
Cottonwood (<i>Populus</i> sp.)	1	3	
Dogwood (<i>Cornus</i> sp.)	1		
Hackberry (<i>Celtis occidentalis</i>)	12	9	
Hickory, (<i>Carya</i> sp.)	5	4	
Shellbark (<i>Carya laciniosa</i>)	T		
Hornbeam (<i>Ostrya virginiana</i>)	2		
Kentucky Coffee Tree (<i>Gymnocladus dioica</i>)	T		
Locust, ?		T	
Black (<i>Robinia pseudoacacia</i>)	T		
Honey (<i>Gleditsia triancanthos</i>)	T	1	14
Maple, (<i>Acer</i> sp.)	3	8	
Sugar (<i>Acer saccharum</i>)	1		
Oak, Black (<i>Quercus velutina</i>)	5	2	
Burr (<i>Quercus macrocarpa</i>)	1	3	2
Overcup (<i>Quercus lyrata</i>)	1		
Post (<i>Quercus stellata</i>)	T		
Red (<i>Quercus rubra</i>)	1	1	
Spanish (<i>Quercus falcata</i>)	1		
Swamp (<i>Quercus bicolor</i>)	T	1	
White (<i>Quercus alba</i>)	1	1	
Pecan (<i>Carya illinoensis</i>)	1	1	
Persimmon (<i>Diospyros virginiana</i>)	T	2	2
Plum (<i>Prunus</i> sp.)	T		
Red Haw (<i>Crataegus</i> sp.)	T	1	11
Red Mulberry (<i>Morus rubra</i>)	T		
Sassafras (<i>Sassafras albidum</i>)	T		
Sweetgum (<i>Liquidambar styraciflua</i>)	20	18	
Sycamore (<i>Platanus occidentalis</i>)	1		
Willow (<i>Silix</i> sp.)	1	2	18

Abbreviations: T=Trace (i.e. <1%); Data based on Lewis (1974:18-28).

A CULTURAL RESOURCES SURVEY
OF STEELE, NEW FRANKLIN, AND MAIN DITCHES, AND
NATIONAL REGISTER OF HISTORIC PLACES SIGNIFICANCE TESTING
OF SITES 2PM574, 575, 577, AND 23PM578,
PEMISCOT COUNTY, MISSOURI

by

Robert F. Cande
Robert H. Lafferty, III
Michael C. Sierzchula
M. Tracy Oates
and
James Barnes



MID-CONTINENTAL
RESEARCH ASSOCIATES

Final Report

Memphis District Corps of Engineers
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MCRA Report # 89-8

July 15, 1990

Levee

The Levee macrobiotic community includes two plant communities: 1) the Cottonwood-Sycamore community found along the active river channel and 2) the Sweetgum-Elm Cane Ridge forest on abandoned courses. The arboreal species found in the Sweetgum-Elm community include all of the species found along the natural levee; however, their mix is considerably different. These two communities are in the highest topographic position in the county and these areas also supported a dense understory of plants including cane (*Arundinaria gigantea*), spice bush (*Lindera benzoin*), pawpaw (*Asimina triloba*), trumpet creeper (*Campsis radicans*), red bud (*Cercis canadensis*), greenbrier (*Smilax* sp.), poison ivy (*Rhus radicans*) and a number of less frequent herbaceous plants. The most common of these was cane, which often formed nearly impenetrable canebrakes. Canebrakes provided cover for many of the larger species of land animals and were an important source of weaving and construction material.

The major mammals included in this biotic community included white-tailed deer (*Odocoileus virginianus*), cougar (*Felis concolor*), black bear (*Ursus americanus*), elk (*Cervus canadensis*), skunk (*Mephitis mephitis*), opossum (*Didelphus marsupialis*), raccoon (*Procyon lotor*), eastern cottontail rabbit (*Sylvilagus floridanus*), gray fox (*Urocyon cinereoargenteus*), and gray squirrel (*Sciurus carolinensis*). Important avian species included the wild turkey (*Meleagris gallopavo*), the prairie chicken (*Tympanuchus cupido*), ruffed grouse (*Bonasa umbellus*), passenger pigeon (*Ectopistis migratorius*) and carolina parakeet (*Conuropsis carolinensis*).

Prior to artificial levee construction, the natural levees were the best farmland in this environment because they are located at the highest elevations from which spring floods rapidly receded and drained. This environment provided for a large number of useful species of plants and animals, making it an attractive place for settlement at virtually all times (except during major floods) since their formation.

Levee/Swamp Ecotone

This modeled macrobiotic community is what Lewis (1974:24-25) has called the Sweetgum-Elm-Cypress seasonal swamp. This ecotone had few species present at any one time and a noticeably clear understory. The arboreal species composition (Table 2) includes more water-tolerant species (Cypress, Willow, and Red Haw) and at times had aquatic animal species. These areas were flooded regularly every year for several weeks to several months, and the soils retained the moisture longer than levee soils. These locations were clearly much less desirable for occupation than the levees, but they were easy to traverse in dry periods.

Diverse fauna, drawn from the adjacent swamps and levees, occupied the area at different seasons. In addition, the giant swamp rabbit (*Sylvilagus aquaticus*) and crayfish preferred this ecotone as a habitat. It is probable that many aquatic species, such as fish, were stranded and were scavenged by the omnivores of the forest when this environment changed from a wetland to a dry open swampscape. Characteristically, the soils are poorly drained due to the presence of clays in the upper horizons. Normally aquatic trees, especially cypress, would have been exploitable in this environment with land-based technology.

Swamp

Included in these modeled strata are the different environments that were under water prior to drainage, as defined by the soils deposited in slackwater conditions. These soils occur at the lowest elevation in the project area. Before drainage the following ecozones were included under this rubric: river channels, lakes, marsh and Cypress deep swamp. These ecozones are successional stages in this environment, but all are aquatic. The Cypress deep swamp (Table 2) is only one of the three having arboreal species.

Several important herbaceous species were found in these aquatic environments. These included cattails (*Typha latifolia*), various grape vines (*Vitis* sp.), button bush (*Cephalanthus occidentalis*), and hibiscus (*Hibiscus* sp.). The latter were an important source of salt (Morse and Morse 1980).

The fauna of the aquatic environment were quite different from the terrestrial species, which mostly penetrated only the swamp edge. Beaver, mink, and otter were important swamp mammals. Of special interest were fish and waterfowl, abundant in this great riverine flyway. But, a means of water transportation was necessary to exploit these resources. Although dugout canoes have been dated to at least 1,000 B.C., it is likely that they may have occurred a great deal earlier.

In summary, this has been a rich environment for a long period of time. The project area contained, at different times, all of the major environments found in the Lower Mississippi Valley. During much of late prehistoric times, it was on a major interface between a very large backwater swamp to the west and the well-drained Mississippi River levees. Cutting through these large scale formations is Pemiscot Bayou, whose fluviality has created smaller scale levees and swamps.

PROJECT AREA PREHISTORY AND HISTORY

To assess the significance of archeological and historic properties it is necessary that they be able to contribute to our knowledge of prehistory or be associated with personages, events, or historically important architecture. To assess which sites have these qualities and to critique our evaluations, we present below a brief sketch of what is known of the prehistory of the region, as well as a brief history of the region.

ARCHEOLOGICAL BACKGROUND

Archeological research has been carried out in northeast Arkansas and southeast Missouri for nearly a century (Table 3). As with much of the Mississippi Valley, the earliest work was done by the Smithsonian Mound Exploration Project (Thomas 1894), which recorded the first sites in the region. Most of these were the large mound groups. Since that time a great deal of work has been done in the Central Mississippi Valley area (cf. Willey and Phillips 1958 for definitions of technical terms) resulting in several extensive syntheses of the region's prehistory (Morse and Morse 1983; Chapman 1975, 1980). In this section we summarize the archeological research that has taken place, what is known of the prehistory of the region, and limits in these data as they apply to the project area.

Table 3. Previous Archeological Investigations in Northeast Arkansas and Southeast Missouri.

<u>Investigator</u>	<u>Location and Contribution</u>
Potter 1880	Archeological investigations in southeast Missouri.
Evers 1880	Study of pottery of southeast Missouri.
Thomas 1894	Mound exploration in many of the large mound sites in southeast Missouri and northeast Arkansas.
Fowke 1910	Mound excavation in the Morehouse Lowlands.
Moore 1910, 1911 1916	Excavation of large sites along the Mississippi, St. Francis, White, and Black Rivers.
Adams and Walker 1942	Survey of New Madrid County.
Walker and Adams 1946	Excavation of houses and palisade at the Mathews site.
Phillips, Ford, and Griffin 1951; Phillips 1970	Mapped and sampled selected sites in southeast Missouri, and northeast Arkansas, Lower Mississippi Valley Survey (LMVS), proposed ceramic chronology.
S. Williams 1954	Survey and excavation at several major sites in southeast Missouri, original definition of several Woodland and Mississippi phases.
Chapman and Anderson 1955	Excavation at the Campbell site, a large Late Mississippian Village in southeast Missouri.
Moselage 1962	Excavation at the Lawhorn site, a large Middle Mississippian Village in northeast Arkansas.
J. Williams 1964	Synthesis of fortified Indian villages in southeast Missouri.
Marshall 1965	Survey along I55 route, located and tested many sites north of the project area.
Morse 1968	Initial testing of Zebree and Buckeye Landing Sites.
J. Williams 1968	Salvage of sites in connection with land leveling, Little River Lowlands.
Redfield 1971	Dalton survey in Arkansas and Missouri Morehouse Lowlands.

Table 3 (continued). Previous Archeological Investigations

<u>Investigator</u>	<u>Location and Contribution</u>
Schiffer & House 1975	Cache River survey.
Price et al. 1975	Little Black River survey.
Morse and Morse 1976	Preliminary report on Zebree excavations.
Chapman et al. 1977	Investigations at Lilbourn, Sikeston Ridge.
Harris 1977	Survey along Ditch 19, Dunklin County, Missouri.
Klinger and Mathis 1978	St. Francis II cultural resource survey in Craighead and Poinsett Counties, Arkansas.
LeeDecker 1978	Cultural resources survey, Wappapello to Crowley's Ridge.
Padgett 1978	Initial cultural resource survey of the Arkansas Power and Light Company transmission line from Keo to Dell, Arkansas.
I. R. I. 1978	Cultural resources survey and testing, Castor River enlargement project.
Dekin et al. 1978	Cultural resources overview and predictive model, St. Francis Basin.
LeeDecker 1979	Cultural resources survey, Ditch 29, Dunklin County, Missouri.
Morse 1979	Cultural resource survey inside Big Lake National Wildlife Refuge.
LeeDecker 1980a	Cultural resource survey, Ditch 81 control structure repairs.
LeeDecker 1980b	Cultural resources survey, Upper Buffalo Creek Ditch, Dunklin County, Missouri, and Mississippi County, Arkansas.
Morse and Morse 1980	Final report to COE on Zebree project.

Table 3 (continued). Previous Archeological Investigations.

<u>Investigator</u>	<u>Location and Contribution</u>
J.Price 1980	Archeological investigations at 23DU244, limited activity Barnes site, Dunklin County, Missouri.
Price and Price 1980	A predictive model of archeological site frequency, transmission line, Dunklin County, Missouri.
Lafferty 1981	Cultural resource survey of route changes in AP&L Keo-Dell transmission line.
Klinger 1982	Mitigation of Mangrum site.
Santeford 1982	Testing of 3CG713.
Bennett and Higginbotham 1983	Mitigation at 23DU227, Late Archaic through Mississippi period site.
Keller 1983	Cultural resources survey and literature review of Belle Fountain Ditch and tributaries.
Price and Price 1984	Testing Shell Lake Site, Lake Wappapello.
Chapman 1975, 1980	Synthesis of Archeology of Missouri.
Morse and Morse 1983	Synthesis of Central Mississippi Valley prehistory.
Lafferty et al. 1984, 1985	Cultural resource survey, testing and predictive model, Tyronza Watershed, Mississippi County, Arkansas.
Lafferty & Sierzchula 1986	Cultural Resources Survey and Record Check, Belle Fountain Ditch, Pemiscot and Dunklin Counties, Missouri
Lafferty et al. 1987	Cultural resources survey and testing, pollen cores and geomorphic reconstruction, Ditch 29, Mississippi County, AR
Teltser 1988	Controlled surface collections on 3 sites, Stoddard and Dunklin Counties, Missouri.
Lafferty and Cande 1989	Cultural Resources survey and testing Eaker Air Force Base Mississippi County, Arkansas
Wadleigh and Thompson 1989	Proton Magnetometer survey, 3MS105, Eaker Air Force Base, Mississippi County, Arkansas

The earliest professional archeological work in the region was the work carried out by the Smithsonian Institution mound exploration project (Table 3). Thomas (1894) and his associates excavated at three sites near the project area: Pecan Point, a Nodena phase site, Sherman mounds and the Jackson mounds. These Mississippi period sites were located outside the project area. Principally excavation in large mound sites, the work identified the American Indians as the authors of the great earthworks of the eastern United States.

Most of the early work was concerned with specimen collection for museums (e.g., Potter 1880; Moore 1910; Fowke 1910). Some of these data were used to define the great ceramic traditions, including the Mississippian tradition, in the eastern United States (Holmes 1903). Many of these original conceptualizations remain the basis upon which our current chronologies are structured (e.g. Ford and Willey 1941; Griffin 1952; Chapman 1952, 1980).

There was a hiatus in the region's archeological work until the 1940s when Adams and Walker began the first modern archeological work for the University of Missouri (Adams and Walker 1942; Walker and Adams 1946). Beginning in 1939 the Lower Mississippi Valley Survey (LMVS) conducted a number of test excavations at many of the large sites in the region (Phillips, Ford, and Griffin 1951; S. Williams 1954). This work has continued to date in different parts of the valley (e.g., Phillips 1970; S. Williams 1984). The LMVS has produced definitions for numerous ceramic types in the Lower Mississippi Valley area and produced the first phase definitions for many of the archeological manifestations known in the latter part of the archeological record, particularly the Barnes, Baytown, and Mississippian traditions of the north (S. Williams 1954).

Beginning in the 1960s the tempo and scope of archeological work in the region increased. Numerous survey and testing projects were carried out for proposed federally funded projects (Marshall 1965; Williams 1968; Hopgood 1969; Krakker 1977; Gilmore 1979; IRI 1978; Dekin et al. 1978; Lafferty 1981; Morse and Morse 1976, 1980; Morse 1979; Klinger and Mathis 1978; Klinger 1982; Padgett 1978; C. Price 1976, 1979, 1980; J. Price 1976a, 1976b, 1978; Greer 1978; LeeDecker 1979; Price, Morrow and Price 1978; Price and Price 1980; Santeford 1982; Sjoberg 1976; McNeil 1982, 1984; Klinger et al. 1981). Generally referred to as cultural resources management studies, these projects have greatly expanded the number of known sites from all periods of time and accumulated an extensive body of data on the variation present on a range of different sites.

As well as small-scale archeological projects, the large-scale excavation projects were continued in the region. Major excavations at the Campbell site (Chapman and Anderson 1955), Lawhorn (Moselage 1962), Snodgrass site (Price 1973; Price and Griffin 1979), Lilbourn (Chapman et al. 1977; Cottier 1977a, 1977b; Cottier and Southard 1977), and Zebree (Morse and Morse 1976, 1980) have greatly expanded our understanding of the Mississippian cultures. This understanding has resulted in the definition of the temporal/spatial borders between different Woodland and Mississippian manifestations and has resulted in definitions of assemblages. Several major syntheses have resulted (Chapman 1975, 1980; Morse 1982a, 1982b; Morse and Morse 1983) which provide up-to-date summaries and interpretations of the region's archeological work.

The Zebree archeological project was one of the largest excavation projects conducted in Arkansas. Over a period of eight years, large parts of this site

were excavated. The excavations resulted in, among other things, the definition of the Big Lake phase and produced much data on the Barnes culture (see below for more discussion of these archeological manifestations).

In 1983 New World Research, Inc., conducted a cultural resources survey and literature review of the Belle Fountain Ditch, in southeast Missouri and northeast Arkansas located just north of Eaker Air Force Base. Part of this project involved survey of transects parallel to and between the project area, surveyed later by MCRA (Lafferty and Sierzchula 1987), and the ditch (Keller 1983). Keller found no archeological sites in this segment of Belle Fountain Ditch, which he attributed to the older surface being buried by more recent backwater swamp clays. These results were duplicated in the MCRA project (Sierzchula and Lafferty 1987).

In 1987 MCRA completed a survey and testing project on Ditch 29, which is located just north of Eaker Air Force Base on the Missouri and Arkansas border (Lafferty et al. 1987). This work included a deep pollen core from Pemiscot Bayou and a geomorphic reconstruction which happened to include the present project area (Guccione, Lafferty and Cummings 1988:71).

REGIONAL PREHISTORY

The studies described above and work in adjacent regions have resulted in the definition of the broad pattern of cultural history and prehistory in the region. However, knowledge of the region is still sketchy with few Archaic and Woodland period sites having been excavated. This status has seriously constrained our understanding of settlement systems. Therefore, while this region may be fairly well known with respect to the Mississippi period, much more work needs to be done before the basic contents and definitions of many archeological units in space and time are adequate (cf. Morse 1982a). Currently we have a few key diagnostic types associated with some cultural units, but, the range of artifact assemblage variation across chronological and spatial boundaries is not yet defined. Nor are the ranges of site types known for any of the defined units. The adequate definition and resolution of these fundamental questions and problems are necessary before we can begin to reconstruct and use the data for understanding more abstract cultural processes as is possible in better known archeological areas such as the American Southwest.

The Paleo-Indian period (10,000-8,500 B.C.) is known in the region from scattered projectile point finds over most of the area. These include nine Clovis and Clovis-like points from the Bootheel of Missouri (Chapman 1975:93). No intact sites have yet been identified from this period, and the basal deposits of the major bluff shelters thus far excavated in the nearby Ozark Mountains have contained Dalton period assemblages. Lanceolate points are known from bluff shelters and high terraces (Sabo et al. 1982:54), which may represent different kinds of activities or extractive sites, as they have been shown to have been in other parts of the country. For the present any Paleo-Indian site in the region is probably significant.

The Dalton period (8,500-7,500 B.C.) is fairly well known in the Lower Mississippi Valley which has produced some of the better known Dalton components and sites in the central continent. These include the Sloan site (Morse 1973) and the Brand site (Goodyear 1974). These and other more limited

or specialized excavations and analyses have resulted in the identification of a number of important Dalton tools (i.e., Dalton points with a number of resharpening stages, a distinctive adze, spokeshaves, several varieties of unifacial scrapers, stone abraders, bone awls and needles, mortars, grinding stones, and pestles). At least three different site types have been excavated: the bluff shelters, which were seasonal habitation sites, a butchering station (the Brand site), and a cemetery (the Sloan site). We do not have the other part(s) of the seasonal pattern which should be present in the region, nor have any other specialized activity sites been excavated. Dalton sites are known in a number of locations, especially on the edge of the relict braided surface, on Crowley's Ridge, and the edge of the Ozark Escarpment. Given the present resource base, a number of important questions have been posed concerning the early widespread adaptation to this environment (Price and Krakker 1975; Morse 1982a, 1976). Adjacent areas of the Ozarks have had modern controlled excavations from Rogers, Albertson, Tom's Brook, and Breckenridge shelters (McMillan 1971; Kay 1980; Dickson 1982; Logan 1952; Bartlett 1963, 1964; Wood 1963; Thomas 1969).

The Early to Middle Archaic periods (7,500 - 3,000 B.C.) are best known from bluff shelter excavations in the Ozarks (Rogers, Jakie's, Calf Creek, Albertson, Breckenridge and Tom's Brook shelters). During this long period a large number of different projectile point types were produced (i.e., Rice Lobed, Big Sandy, White River Archaic, Hidden Valley Stemmed, Hardin Barbed, Searcy, Rice Lanceolate, Jakie Stemmed, and Johnson). No controlled excavations have been done at any Early or Middle Archaic site in southeast Missouri or northeast Arkansas (Chapman 1975:152). There are no radiocarbon dates for any of the Archaic period from southeast Missouri (Dekin et al. 1978:78-79; Chapman 1980:234-238). The Middle Archaic archeological components are rare to absent in the Central Mississippi Valley leading the Morses to propose that the region was abandoned during this dry period (Morse and Morse 1983). Therefore, much of what we know of the archeological manifestations of this period is based upon work in other regions that has been extrapolated to the Mississippi Valley. At present, phases have not been defined.

The Late Archaic period (3,000 B.C. - ~500 B.C.) appears to be a continuing adaptation to the wetter conditions following the dry Hypsithermal. This corresponds to the sub-Boreal climatic episode (Sabo et al. 1982). The lithic technologies appear to run without interruption through these periods, with ceramics added at about the beginning of the present era. Major excavations of these components have taken place at Poverty Point and Jaketown in Louisiana and Mississippi (Ford, Phillips and Haag 1955; Webb 1968). A fairly large number of Late Archaic sites are known in eastern Arkansas and Missouri (Chapman 1975:177-179,224; Morse and Morse 1983:114-135). Major point types include Big Creek, Delhi, Pandale, Gary and Uvalde points. Other tools include triangular bifaces, manos, grinding basins, grooved axes, atlatl parts and a variety of tools carried over from the earlier periods such as scrapers, perforators, drills, knives, and spokeshaves. Excavations at the Phillips Spring site have documented the presence of tropical cultigens (squash and gourd) by ~2,200 B.C. (Kay et al. 1980). The assemblages recovered in the bluff shelters from this time period indicate there was a change in the use from general occupation to specialized hunting/butchering stations (Sabo et al. 1982:63). There are some indications of increasing sedentariness in this period; however, the range of site types have not been defined. Late Archaic artifacts are well known from the region, with artifacts usually present on any large multicomponent site. Our understanding of this period is

limited to excavations from a few sites (Morse and Morse 1983; Lafferty 1981). At present we do not know the spatial limits of any phases which have not been defined, nor do we have any control over variation in site types and assemblages.

Early Woodland period (500 B.C.(?) - 150 B.C.). During this period the lithic traditions from the previous period appears to have continued and pottery was begun. As with the previous period, this is a poorly known archeological period with no radiocarbon dates for the early portions of the sequence. The beginning of the period is not firmly established, and the termination is based on the appearance of Middle Woodland ceramics dated at the Burkett site (Williams 1974:21). The original definition of the Tchula period was made by Phillips, Ford, and Griffin (1951:431-436). In the intervening time a fair amount of work has been done on Woodland sites. Chapman concludes that we are not yet able to separate the Early Woodland assemblages from the components preceding and following. At present there is considerable question if there is an Early Woodland period in southeast Missouri (Chapman 1980:16-18). Recent work in northeast Arkansas, however, has identified ceramics which appear stylistically to be from this time period (Morse and Morse 1983; Lafferty et al. 1985 a). J. Price (personal communication) has identified a similar series of artifacts in the southeast Missouri Bootheel. Artifacts include biconical "Poverty Point objects," cordmarked pottery with noded rims similar to Crab Orchard pottery in southern Illinois and the Alexander series pottery in the Lower Tennessee Valley, and Hickory Ridge points. MCRA has recently tested several sites (3MS21, 3MS119, 3MS199 and 3MS471) near the current survey area that contain Early Woodland components.

Middle and Late Woodland periods (150 B.C.- A.D. 850) were a time of change. Participation in the "Hopewell Interaction Sphere" (dentate and zone-stamped pottery, exotic shell; Ford 1963) and an increase in horticulture (corn, hoe chips, and farmsteads) become evident. Mound construction, notably the Helena mounds at the south end of Crowley's Ridge (Ford 1963) indicates greater social complexity. Typical artifacts include Snyder, Steuben, Dickson, and Waubesa projectile points and an increasing number of pottery types (cf. Rolinson 1984; Phillips 1970; Morse and Morse 1983). In the Late Woodland period there is an apparent population explosion as evidenced by a great number of sites with plain grog-tempered pottery in the east and Barnes sand-tempered pottery in the west of the Central Valley (Morse and Morse 1983: 180; Chapman 1980). There is some evidence of architecture (cf. Morse and Morse 1983; Spears 1978) in this period as well as mound center construction (Rolinson 1984). A number of large open sites have not been excavated. There appears, therefore, to be a rather large bias toward the spectacular mound centers in what we know about this important period. A great deal is not understood about the cultural sequence and changes that occurred then. The Late Woodland period in this area has been suggested as the underlying precursor to the Mississippi period, which came crashing into the area with the introduction (invention?: cf. Price and Price 1981) of shell-tempered pottery and the bow and arrow around A.D. 850.

The Mississippi period (A.D. 850-1673) is known from the earliest investigations in the region (Thomas 1894; Holmes 1903; Moore 1916), and has been the most intensively investigated portion of the prehistoric record in northeast Arkansas and southeast Missouri (Chapman 1980; Morse and Morse 1983; Morse 1982 b; Morse 1981; House 1982). Enough work has been done to define the

spatial limits of phases (cf. Chapman 1980; Morse and Morse 1983; Morse 1981). During this period the native societies reached their height of development with fortified towns, organized warfare, more highly developed social organization, corn, bean, and squash agriculture, and extensive trade networks. The bow and arrow was common and there was a highly developed ceramic technology (cf. Lafferty 1977; Morse and Morse 1980; Smith 1978). This effervescence was abruptly terminated by the De Soto entrada in the mid-16th century (Hudson 1984, 1985; Morse and Morse 1983) which probably passed through the project area.

PROTOHISTORIC PERIOD

The De Soto entrada resulted in the first recorded descriptions of Mississippi County, Arkansas, and the Mississippian Climax (Varner and Varner 1951; Hernandez de Biedma 1851; Elvas 1851;). The interpretation of places herein follows Morse (1981) and Hudson's (1985) interpretations. In the summer of 1541 De Soto was allied with the Casquians in a military expedition against the province of Pacaha. According to Morse:

The large swamp up the Tyronza [between Tyronza Junction and Victoria in the southwest corner of the county] is a suitable candidate for the boundary between Casqui and Pacaha. Pecan Point, a Nodena phase village near the Mississippi River [southeast of Wilson], could probably be the location of the capital of Pacaha. It was an impressive site producing numerous fine pottery specimens, and is located an appropriate distance from Parkin. An expedition left Pacaha for an area "40 leagues distance" to get salt and yellow metal (Varner and Varner 1951:449). The only area where both salt and copper occur together in large amounts is in southeast Missouri, within easy reach of the Nodena phase [which occupied most of Mississippi County east of Big Lake]. Mountains also occur here as observed by the Spanish (Morse 1981:68).

There is some evidence that this exploratory expedition traveled north from Pacaha through the Missouri Bootheel. The Campbell site, a large Nodena site located 1 km east of the project area is reported to have produced 16th century European artifacts.

As the Spanish crossed the swamp of the Tyronza Sunk Lands Mississippi County passed from the mists of prehistory into the annals of history. The expedition pushed north from Parkin covering about 15 kilometers per day. After three days of march the Spaniards:

... came to a swamp that was very difficult to cross; for there were great morasses at its entrances and exits, and, in its center, water which though clean was so deep that for a distance of twenty feet it had to be swum. This swamp formed the boundary between the two enemy provinces of Casqui and Capaha. The men crossed it on some very unstable wooden bridges discovered there, and the horses swam, but with

great difficulty because of the pools of stagnant water lying near the banks on both sides. The whole of the fourth day was occupied in making this crossing, and then both the Indians and Spaniards camped in some beautiful and very peaceful pasture lands a half-league distant [near Joiner] (Varner and Varner 1951:436).

And thus the wetness of what was to become western Mississippi County passed into the records of mankind. At this time, as alluded to above, the province of Pacaha (Capaha in Varner and Varner 1951 - the different provinces have different spellings in the various accounts) was one of the most powerful polities in North America. Archeological evidence suggests that it controlled the eastern half of Mississippi County as well as the Mississippi River trade. The "Capitol" was probably at Lake Wapanocca. The Spanish describe the Capitol as follows:

It consisted of five hundred large and good houses, which were located on a site somewhat loftier and more eminent than its surroundings, and it had been turned into almost an island by means of a man-made ditch or moat ten or twelve fathoms deep and in places fifty feet wide, but never less than forty. The moat was filled from the previously mentioned Great River, which flowed three leagues above the town; and the water was drawn into it by human effort through an open canal connecting it with the river, a canal which was three fathoms deep and so wide that two large canoes went down and came up it side-by-side without the oars of the one touching those of the other. Now this moat, of the width we have said, lay on only three sides of the town, for it was as yet incomplete. But the fourth side was fenced off by a very strong wall of thick wooden boards that were thrust into the ground, wedged together, crossed, tied and then plastered with mud tamped with straw in the manner we have described farther back. The great moat and its canal contained such a quantity of fish that all the Spaniards and Indians who accompanied the Governor [nearly 9,000] ate them until they were surfeited, and still it appeared as if they had not taken out a single fish (Varner and Varner 1951:436).

Therefore, at the height of the Mississippi period the natives of the Mississippi Valley were already engaged in the construction of hydraulic works, which in the present century have come to dominate the landscape. After this brief glimpse of the fully adapted Mississippians at the height of their power and glory in the 16th century, the Central Mississippi Valley once again slipped into the mists of time.

HISTORIC PERIOD (1673-PRESENT)

Following the De Soto expedition, the area was not visited until the French opened the Mississippi Valley in the last quarter of the 17th century. The

Indian societies were a mere skeleton of their former glory and the population a fraction of that described in the De Soto chronicles. Marquette, in his rediscovery of the Mississippi for the French, did not encounter any Indians between the Ohio and the Arkansas rivers. He described this section of his journey south of the Ohio River as follows:

Here we Began to see Canes, or large reeds, which grow on the banks of the river; their color is a very pleasing green; all the nodes are marked by a Crown of long, narrow, pointed leaves. They are very high, and grow so thickly that The wild cattle have some difficulty in forcing their way through them.

Hitherto, we had not suffered any inconvenience from the mosquitoes; but we were entering their home, as it were. . .

We thus push forward, and no longer see so many prairies, because both shores of The river are bordered with lofty trees. The cottonwood, elm, and basswood trees there are admirable for Their height and thickness. The great numbers of wild cattle, which we heard bellowing, lead us to believe that The Prairies are near. We also saw Quail on the water's edge. We killed a little parroquet, one half of whose head was red, The other half and The Neck was yellow, and The whole body green (Marquette 1954:360-361; strange capitalization in the French original).

During the French occupation most of the settlements were restricted to the major river courses with trappers and hunters living isolated lives in the headwaters of the many smaller creeks and rivers.

EARLY AMERICAN SETTLEMENT

In 1803 the French sold the Louisiana Territory to the United States. This included today's Missouri. The territory was administered from the territorial capital in St. Louis.

The passage of the stern-wheel steamboat, "Orleans", from Pittsburgh to New Orleans in 1812 presaged great changes for the Louisiana Territory. This boat and the many others to follow used wood to power their steam engines and thus created a demand for cordwood, which the early settlers along the river met by chopping and selling wood to such steamboats (Edrington 1962: 49). Perhaps more importantly, the steamboat made two-way transportation on the great river roads in the nation's heart much faster and more reliable - when the rivers were up.

At first the only settlers in this part of the country lived in cabins surrounded by clearings along the river. In 1834, according to Joseph Hearn, there were no more than half a dozen clearings, all on the river from the lower end of the county to Mill Bayou. The Euro-American occupation of the Central Mississippi Valley proceeded overland down Crowley's Ridge and slowly spread out from the rivers. Ports were established at Piggott on the high

ground of Crowley's Ridge in the St. Francis Gap in 1835. It was located on the Helena-Wittsburg road which ran down Crowley's Ridge (Dekin et al. 1978:358). All of the settlements in the 1830s between Piggott and Helena in the St. Francis Basin were either along the rivers or on Crowley's Ridge. Towns continued to be founded in these environments into the early 1900s. Settlements away from rivers and along overland roads began in the 1850s and greatly accelerated with the construction of railroads, levees, and drainage ditches in the late 19th century.

Settlement and enterprise remained concentrated in areas near the Mississippi River and accessible tributaries. Swamplands, (Big Lake and the project area) in the western part of the county and flooding from the river presented a formidable obstacle to further settlement of much of this land. The Mississippi River floodplain was almost wilderness and was practically uninhabited. Streams and bayous were the only arteries for travel through this swampscape more than half the size of New Jersey. Settlement in the interior of the Bootheel took place on drier areas near streams. Manila was founded in 1852 as the port of access to Buffalo Island on the Little River. Blytheville was founded in 1853 on Pemiscot Bayou and Caruthersville was founded in 1857 (Dekin et al. 1978:358). Low-lying areas in the interior were often flooded and were unsuitable for agriculture. These areas were dominated by vast virgin Southern Floodplain forests. Pemiscot County was cut off by these to the north, west, and south for the last half of the 19th century (Goodspeed 1889: 446).

LEVEE CONSTRUCTION

In 1850, the U. S. Congress passed the Arkansas Swamp Land Act, in which overflowed lands in southeast Arkansas were given to the state to sell. The proceeds would pay for levees and drains to reclaim the land (Harrison and Kollmorgen 1948: 20-52). In 1852, sixteen miles of levee in the southeastern part of the county were built from such land sales, but during the Civil War the levees were not maintained. In fact, they were sabotaged (Morse 1976: 20). So in 1879 Congress created a seven-person Mississippi River Commission, whose president would be selected from the Army Corps of Engineers. In 1881, Congress made the first appropriation of \$1,000,000 with the Rivers and Harbors Act to start building levees. The levees opened hundreds of thousands of acres of rich and fertile land to cultivation; they increased the taxable property of the county and made available large areas for settlement (Goodspeed 1889: 459, 460). Levee work started in 1882 (Edrington 1962: 63) but floods in 1882, 1883 and 1884 were disastrous and curtailed all growth, development, and prosperity. Many farms and new clearings were abandoned (Goodspeed 1889: 459).

From 1865 to 1890, thousands of Irish laborers were brought in to supplement the Black manpower to build levees. The Irish sublet 100-foot stretches of levee from the levee contractor. Their construction work was known as the "...three M' method...Men, Mules, and Mud". Later the Irish helped to build the railroads in northeast Arkansas. "Their unknown and unmarked graves dot the right-of-way of all our early railroads and levee lines" (Edrington 1962: 63; Sartain n.d.: 30). In 1893 the St. Francis Levee Board was organized and empowered by the Legislature to issue bonds and collect taxes to build a levee along the entire front of the St. Francis Basin to protect it from overflow (Fox 1902:16).

The late 1800s saw men with few resources settle here who would make themselves prosperous. John H. Hardeman was an early settler of the county and was instrumental in ripping the Bootheel from Arkansas and making it part of Missouri. He made a fortune in cattle with a vast ranch centered in Pemiscot and Dunklin counties. Railroad and levee construction and swamp drainage radically changed the landscape making this one of the last frontiers in North America to capitalistic expansion.

RAILROAD

In 1893, with the establishment of the levee districts, people began to come back to Mississippi County believing that flooding would soon end. Transportation was still mainly by water (Dew 1968: 23). Steamboats floated crops, furs, bear oil, and timber down to Marked Tree for shipment to Memphis and New Orleans (Edrington 1962: 49). There were few roads in the eastern part of the county and these were impassable in wet weather. There were no roads in the Sunk Lands, where ox teams were used to haul out logs. The Cotton Belt, the Iron Mountain, and the Frisco railroads all went around the western and southern border at Paragould, Jonesboro and Marked Tree. Robert E. Lee Wilson, who had purchased a sawmill, began hauling his timber by a short line railway that he built. In 1889 his mill at Idaho Landing (near Wilson) had a capacity of 14,000 feet daily, and he was shipping large quantities of lumber to Chicago annually (Goodspeed 1889: 568, 569). In 1896 the Railroad Commission of Arkansas issued a charter to the Jonesboro, Lake City and Eastern (J.L.C. & E.) Railroad Company to bring out timber from the Sunk Lands. The *Craighead County Sun* said in 1897 " ...it is opening up one of the most alluvial sections of the South and a timber belt that is unsurpassed anywhere" (Dew 1968:25). The wooded area of Arkansas was greater than that of any other state in the union (Fox 1902: 18).

The coming of the railroad caused a population boom in the Sunk Lands. By 1902 the railroad had crossed Big Lake and had reached Blytheville making millions of acres of timberland available and creating new towns all along the railroad line. Roads, wagon trails, and narrow gauge train railways came out from the logging settlements like spokes,, encouraging trade and more settlement. Logging became the main industry and created associated industries: box plants, barrel stave factories, a planing mill, a shingle mill, and a wagon and buggy manufactory (Dew 1968: 27; Goodspeed 1889: 489; Fox 1902: 29-30). Railroad crossties used throughout the nation came from Buffalo Island (Dew 1968: 27). In 1902 there were 35 sawmills producing from 3,000 to 70,000 feet of lumber a day. The largest sawmill operator in the county was the Chicago Mill and Lumber Company owned by Governor Frank Lowden of Illinois (Fox 1902:18).

In 1911 Lee Wilson bought controlling interest in the J.L.C. & E. Railroad and merged it with the 10-mile-long Wilson and Northern Railroad he had built, resulting in 96.4 miles of J. L. C. & E. mainline track. Both the *Craighead County Sun* (1900) and the *Janesboro Tribune* (1906) hailed him as a progressive businessman.

SWAMP DRAINAGE AND ITS EFFECTS

Efforts begun in 1902 to establish drainage districts failed again and again, hampered by actions of big lumber interests. Lumbermen weren't concerned with this issue and farmers didn't want to pay the tax, although

small, necessary for such an undertaking. Otherwise sane and upstanding citizens engaged in fist fights and brandished knives. Ultimately, over a period of years the violent objections led to an attempted lynching of Judge Logan D. Rozelle and Lee Wilson. In spite of the violence and the obstacles, drainage districts were finally established. The Office of Drainage Investigation in Washington, D. C., called it the "largest and best planned and most economically constructed drainage district in the United States" (Sartain n.d.: 6, 7).

In 1918 the J. L. C. & E. advertised that the final work in draining was being done, and by 1919 there was a land boom. Land sales were of no more than 80 acres each (Dew 1968: 15, 31), however; the land was cheap and fertile and it brought people who were anxious to farm it. Insisting that "...the plow should follow the saw" (Lee Wilson and Company n.d.), Lee Wilson acted on this belief and planted cotton on the deep alluvial soil. Other planters followed suit. By December 1916, after World War I in Europe pumped up agricultural prices in the United States, the railroad shipped 38 carloads of cotton, valued at \$238,000, on a single train--a record for a shipment from the Sunk Lands. Still later, in 1919, the all-time record for a single J. L. C. & E. freight lading was set when R. E. L. Wilson shipped 6500 bales of cotton, valued at one million dollars, on a special train. It took 600 pickers two months to harvest the crop (Dew 1968:31). A framed photograph of this train with its load of cotton is proudly displayed in the offices of the Delta Valley & Southern, affiliate of the Lee Wilson Company in Wilson, Arkansas. The caption reads: "J. L. C. & E. 1919 MILLION DOLLAR TRAIN" (Hope Gillespie personal observation). By the end of World War I agriculture had outdistanced logging. In part because timbering was a finite process, and railroads hastened the cutting and disappearance of the great hardwood forest (Dew 1968: 31).

When cotton prices dropped in 1920, Lee Wilson led farmers in experimenting with other crops. Wheat, soybeans, corn, cantaloupes, sweet potatoes, hay, and alfalfa became only some of the valuable alternatives to cotton. Planters used tenant farmers to sow and harvest. James Craighead's opinions on tenants and land ownership were quoted widely by authors at the turn of the century. He believed that large land holdings were a "drawback to prosperity" and that when owners divided their land and financed it on a long term basis to permanent settlers, everyone profited. People became responsible when they owned the land (Goodspeed 1889:485; Fox 1902:47-50). Most of the farming in eastern Mississippi County in the early 20th century was done by Black tenants. On Buffalo Island farming did not really begin until the timber companies began to sell off their holdings after exploiting the timber.

PROJECT AREA HISTORY

The first settlement in the county was at Little Prairie. This was a fort constructed in 1794 by Francois Le Sieur. By 1799 the population had grown to 78. Little Prairie continued to grow until 1811 when it was destroyed by the New Madrid earthquake. Caruthersville was rebuilt on the location of the destroyed French Fort.

Pemiscot County was formed in 1851 out of New Madrid County. The county name is reportedly an Indian word meaning "liquid mud" (Brown 1971:40). The

interior of the county did not become opened until around the turn of the century, when the levee was constructed and drainage was under way. By 1905 Steele was founded on the Iron Mountain Railroad which had been installed to remove the last virgin forest in the state. As the forests gave way before the industrial maws the land was resold and became farmland.

CHAPTER 2

ARCHEOLOGICAL SURVEY

by Michael C. Sierzchula

INTRODUCTION

Methods used during an archeological survey are based on several factors. These include conditions present in the project area, nature (e.g. configuration) of the area to be investigated, level of investigation needed to meet contract specifications and sponsoring agency requirements (Appendix A), and how sites are reflected in the environment (Lafferty et al. 1987). Before beginning the survey portion of this contract each of these items was addressed to determine the most efficient and productive means of surveying the project area. Locations considered to be high probability areas were plotted on topographic maps prior to initiating the survey. These areas were identified based on soil commonly associated with levees or high areas along abandoned river channels, principally Pemiscot Bayou (cf. Lafferty et al. 1987; Lafferty et al. 1984).

PROJECT AREA CONDITIONS

This survey was initiated at an excellent time. Row crops had been removed from the field and rains had settled the disced ground. Two conditions kept this survey from being conducted under optimum conditions. First, in a number of locations, grass was planted on the spoil pile. The spoil pile is considered important because it allows the investigator to examine deeply buried soils that may possess cultural remains (Lafferty et al. 1984). Second, recent heavy rains resulted in standing water between rows and in low areas. In addition, chaff was concentrated along the high water mark on the spoil pile and in the field. Locals noted that had the survey been conducted a couple of weeks earlier, a flat-bottomed boat and scuba gear would have been needed. While the wet soil and standing water did hamper investigations to a minor degree, they served to isolate elevated areas. For clarity, conditions encountered during the project are presented as Figure 8.

SURVEY METHODS

Visibility was excellent in the project areas. An intensive pedestrian survey was conducted using transects. The transects were surveyed in a zig-zag fashion to substantially increase the total surface area being inspected. This manner of surveying also allowed a single individual to identify areally restricted, well drained soils not on the soils map. Methods of identification included soil color, drainage, and/or based on the wet conditions present, its adhesion to one's shoes.

Over the course of the survey particular attention was paid to two areas. All spoil piles were inspected if any level of surface visibility was present. Given the fluvial history of the area (Chapter 1) and the possibility of buried levees and cultural material under slack water deposits, inspection of a spoil pile offered the only opportunity to determine if cultural resources existed beneath soils not associated with archeological sites (cf. Lafferty et al. 1984).

In addition, high areas away from the ditch were intensively scrutinized. A typical cross section consisted of a low area adjacent to the spoil pile, with higher ground present at the outer one half to one third of the right of way (ROW). The degree of slope varied from area to area. In areas where the slope was subtle, the extent of the low area was identified by the presence of water in the row furrows, the darker soil color, and higher clay content in the soil. It is believed that the higher area at the outside edge of the ROW may represent a plowed down levee. The full extent of the higher area was always inspected.

The width of the project ROW varied across the entire project area (Figure 8) ROW widths were 100, 300, and 600 feet as specified in the scope of work (Appendix A). Areas with a ROW measuring 100 feet wide were surveyed using a minimum of one transect. Areas possessing a ROW width of 300 feet were surveyed using two transects.

The Main and New Franklin Ditch survey area follows the natural water course of Pemiscot Bayou and extends from the top bank of the ditch 300 feet (91.4 m) landward on the right bank. Two sites were discovered in this part of the project area (23PM575 and 575). One additional site (23PM576), discovered outside of the project area, was reported to the Archaeological Survey of Missouri.

The New Franklin Ditch extends northeast from the Main Ditch. It crosses a low levee of Pemiscot Bayou to Steele Bypass Ditch and Old Franklin Ditch in the bottom of historic Eagle Lake. It then crosscuts a series of sloughs and levees for six miles before turning to the north and following the bottom of the old lake bed. The ROW extends from the top bank 300 feet (71.4 m) eastward on the right bank. On the left bank, it extends from 250-350 feet (76.2 m - 106.7 m) landward from the top bank. One site (23PM578) was discovered in this part of the project area.

Steele Bypass follows the course of Eagle Lake northward to U.S. Hwy. 61. Along this course, 300 feet (91.4 m) of the right bank was surveyed, resulting in the discovery of one site (23PM577). From Hwy. 61 north the Main Ditch, No. 6, crosscuts a ridge which has not yet been ditched. In this area, 300 feet on either side of the ROW was surveyed.

The topography, including a water course, is natural. Six transects measuring approximately 50 meters apart were surveyed in this location. When the survey transects were completed, elevated areas near the creek at the south end were inspected a second time, with field staff randomly walking transects over this area. No sites were discovered in this part of the project area.

On April 1, 1990 six additional acres were surveyed along Steele Bypass. Visibility was about 50%, hampered by wheat and standing water in the field. No cultural artifacts were observed on the surface. The area is south of 23PM574. cursory inspections of the present project area, via survey and testing operations at 23PM574, also divulged no cultural materials.

Since the sites recorded during the survey were to be tested as part of this order, minimal investigation was conducted during the survey. Approximate site limits were established based on transects surveyed and topographic circumscription. Notes concerning field conditions and artifact

density were made and any observed diagnostic material was collected. The site was flagged and plotted on the pertinent topographic map.

TESTING METHODS

The testing methods were designed to determine the nature of the sites and to gain data to determine the significance of the resources. Every effort was made to maximize the probability of encountering significant sub-plowzone deposits and, at the same time, of gaining an understanding of the nature of the sub-plowzone soils.

Upon relocating the site, all surface artifacts were flagged with wire pin flags. If the site was large (e.g. 23PM574), only diagnostics and the edges were flagged. On small sites, at least one person-hour was spent flagging to assure that all artifacts were so marked.

At this point, the artifacts were either point plotted or a grid was established and a controlled surface collection was made. Test units were then opened in the high density area of the site. These were excavated to 20 centimeters below the site. Level control was maintained by using excavation level forms, and one profile was described, photographed, and drawn.

RECORDS

Survey records consisted of detailed notes concerning field conditions encountered. In addition, the site documentation information noted above was recorded for each site.

SUMMARY

An archeological survey of Main Ditch, Steele Bypass Ditch, and New Franklin Ditch resulted in the discovery of five archeological sites. This is a very low density of sites and is probably related to the swampy nature of the project area in predrainage times and the tendency to place ditches in the lowest topographic position possible. These results are similar to the results Keller (1983) got in his survey of parts of the same project area. In the next chapter we discuss the testing of four of these recently discovered sites. The fifth site was determined to be outside of the project area and was not tested.

CHAPTER 3 ARCHEOLOGICAL SITES TESTED

by Robert F. Cande

Robert H. Lafferty III

and James Barnes

INTRODUCTION

National Register of Historic Places (NRHP) significance testing was conducted at four archeological sites. This work included mapping, making various kinds of controlled surface collections, and the excavation of test units. In addition, one potential site, identified by the presence of burned clay, was investigated and determined to be a historic burn pile. Another site was determined to be outside the right-of-way and was not investigated further.

The testing was spread over a two month period due to inclement weather, discussed in Chapter 1. Testing was conducted first at 23PM577 and 23PM578 when rain caused a delay in the field work. Work was concluded in June at 23PM574 and 23PM575.

ARCHEOLOGICAL INVESTIGATIONS AT 23PM574 AND 23PM575

Project Description

On June 1 through 4, 1989, Mid-Continental Research Associates conducted archeological investigations at 23PM574 and 23PM575 in Pemiscot County, Missouri. Field work at both sites was undertaken for the U.S. Army Corps of Engineers, Memphis District, as part of and in accordance with Delivery Order Number 1, Contract No. DACW66-89-D-0053. Investigations at 23PM574 included controlled surface collection and limited subsurface testing. At 23PM575 field work consisted of surface reconnaissance and limited subsurface testing designed to determine the nature of the cultural deposits. Robert F. Cande supervised the field work, assisted by Joseph Giliberti and Robin Lair.

Site Descriptions

23PM574 and 23PM575 were located during the pedestrian survey of the Steele Bypass project area. 23PM574, located in an agricultural field just north of Ditch No. 5, occupies the higher portions of a low natural levee. Cultural material consisting of sherds, daub, bone, and lithics was scattered for a distance of approximately 130 meters along the crest of the levee. A single human tooth was among the artifacts collected.

23PM575 is located on the inward levee surface north of Ditch No. 5. Two ceramic artifacts were found within a ten square meter area. Since the soils comprising the levee have been dredged from the ditch interior, the integrity of this site is questionable.

PROJECT AREA SOILS

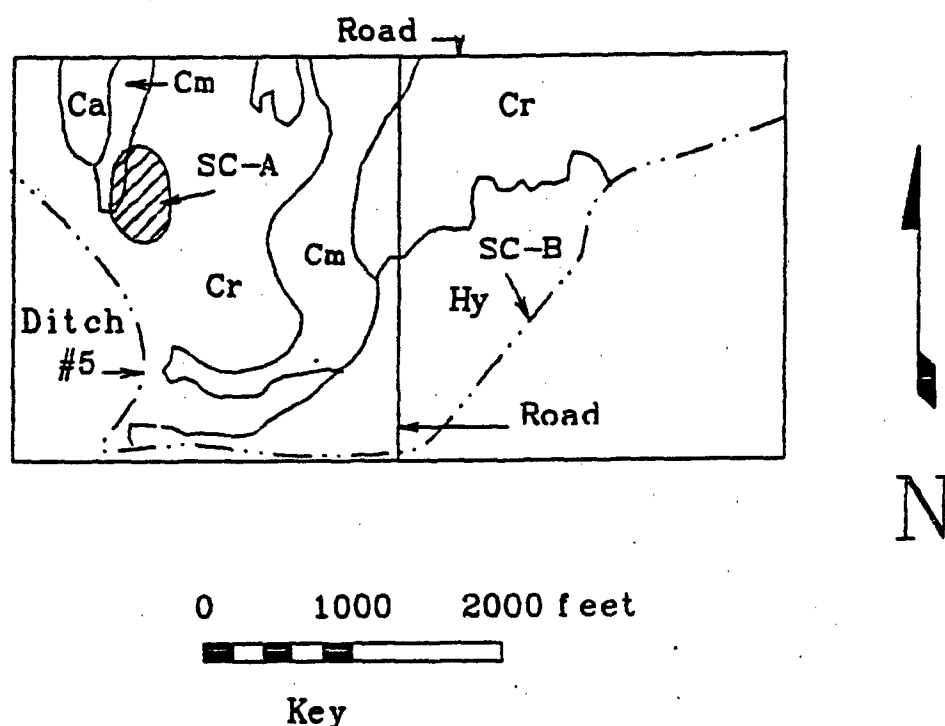
Four soil types have been identified within the general project area (Brown 1971:sheet 45). They are Commerce silt loam, Caruthersville very fine sandy loam, Commerce sandy loam, and Hayti silty clay loam. The distribution of these soils in relation to site locations is shown in Figure 9. Specific soil descriptions are presented below.

Commerce soils consist of deep, dark grayish-brown, somewhat poorly drained, nearly level, nearly neutral soils found mostly on young levees in the eastern part of Pemiscot County (Brown 1971:5-6, sheet 45). A typical profile has a 9-inch-thick (22.9 cm) surface layer of dark grayish-brown silt loam underlain by a grayish brown and dark-gray silty clay loam and silt loam about 20 inches (50.8 cm) thick. The lower part is mottled. Below this layer, to a depth of 50 inches (1.27 m), is a grayish brown silty loam mottled with dark brown. The native vegetation supported by this soil type was mixed hardwoods with an understory of vines and canes.

Commerce silt loam occupies nearly level to gently undulating areas on young natural levees (Brown 1971:6). The soil profile is typical of the series.

Commerce sandy loam occupies very gently undulating areas on young natural levees. The surface layer is a dark grayish-brown to brown sandy loam 6 to 18 inches (15.2 to 45.7 cm) thick which is underlain either by a silt loam to a silty clay loam or a sandy loam.

Project Area Soils



- Key
- Ca - Caruthersville very fine sandy loam
 - Cm - Commerce sandy loam
 - Cr - Commerce silt loam
 - Hv - Hayti silty clay loam

Figure 9. Project area soils.

Caruthersville soils consist of deep, light-colored, moderately well drained soils located on the highest parts of young natural levees (Brown 1971:4-5). A typical profile contains a dark grayish-brown surface layer of very fine sandy loam approximately 11 inches (27.9 cm) thick, which is underlain by stratified dark grayish-brown, brown, or grayish-brown silt loam of very fine sandy loam. The soil texture is calcareous, friable and mottled. The soil is naturally fertile. Native vegetation supported on this soil was mixed hardwoods with an understory of vines and canes.

Caruthersville very fine sandy loam is found on the highest parts of young natural levees bordering the Mississippi River. It has a soil profile that is typical of the series.

Hayti soils are deep, poorly drained, nearly level soils on the recent Mississippi River flood plain (Brown 1971:11-12). They developed in clayish and loamy alluvium. A typical profile has a very dark grayish-brown silty

clay loam surface layer about 6 inches (15.2 cm) thick. The subsoil, which extends to about 37 inches (94 cm), is a dark gray silty clay loam containing thin strata of coarser or finer texture. Below this to a depth of about 58 inches (1.47 m), is a dark grayish brown and gray heavy silt loam.

Hayti silty clay loam occupies large, level, and depressional areas at the lowest elevations on young natural levees. Found adjacent to areas of Cooter and Crevasse soils, they were formed in shallow lake bottoms. They have a profile typical of the series.

INVESTIGATIONS AT 23PM574

Surface Investigations

The initial step in the test investigations was to accurately determine the site limits. The site area was planted in soybeans which were eight to 10 inches (20 - 25 cm) tall. Due to recent cultivation, the topsoil was very loose and dry, and artifact visibility was poor. The cultivation had also dislodged, bent, or obscured many of the wire flags left in the field by the survey crew. For these reasons the entire site area was resurveyed. Site limits were determined by walking transects along the crop rows from north to south and placing wire flags at the first and last artifact encountered in each row. Transects were spaced at approximate 5 meter intervals. Each transect was begun at the access road located south of the site and was terminated when no artifacts were found along the row for approximately 20 meters. During this process all visible wire flags left from the original survey were examined. All unmarked flags were collected; flags marking the location of diagnostic artifacts, which had been previously collected, were left in place for subsequent mapping. The site limits were determined to be approximately 193 meters north-south by 93 meters east-west.

Once site limits were determined, a controlled surface collection (CSC) was taken. The collection strategy employed was a modified form of a stratified, systematic, unaligned, random sample. This type of sample, developed by Berry (1962) and Haggett (1965:196) has the advantages of randomization, stratification, and systematic site coverage. The method has been used successfully on many archeological projects (Redman and Watson 1970:279-291, Redman et al. 1979:1-16, Anderson 1980:5-1 to 5-20).

The sampling universe was defined as follows: a) the site, measuring roughly 200 meters north-south by 100 meters east-west, was divided into eight 50 m x 50 m sampling strata, b) the sampling percentage was set at 20%, c) each sampling stratum was then subdivided into 25 10 m x 10 m squares, d) these 25 squares were numbered consecutively from 1 to 25, e) five squares were selected from each sampling stratum using a random numbers table, f) each selected square was then further subdivided into four 5 m x 5 m controlled surface collection units and collected. The total sample consisted of 160 5 m x 5 m collection units totaling 4,000 square meters.

The long axis of the collection grid was set up along the crop rows since they ran virtually due north-south. A 100 meter tape was used to establish the grid and collection units. Each CSC unit was assigned a separate provenience and Field Specimen Number (FSN). An attempt was made to collect 100% of the artifacts within each CSC. Any temporally or functionally diagnostic artifacts located during the CSC that were not in selected

collection units were collected separately and their location flagged for mapping.

Surface Distribution of Cultural Items

The results of the surface collection revealed that the artifact density was very light across most of the total site area. This is shown clearly in Figure 10. Seventy-five CSCs (47%) contained no cultural material, while an additional 54 CSCs (39%) contained two or fewer artifacts. The overall surface artifact density was 0.1 artifacts per square meter which is quite low. The highest density of cultural material occurred in a southwest to northeast trending area between 60N/20E and 150N/80E. Even in this core area the artifact density was less than 0.5 artifacts per square meter. The highest artifact density was recorded in CSC 60N/25E, with 54 artifacts at a density of 2.2 artifacts per square meter. Tables 4 and 5 list all of the cultural material collected.

Cores/Tested Cobbles

Ten cores/tested cobbles were collected. All of these specimens are chert and exhibit the smooth, rounded surface and thick residual cortex typical of stream gravels. Colors range from brown and tan to mottled gray and white, gray and tan, white and red. The most likely source for this material is Crowley's Ridge.

Decortication Flakes

The 76 decortication flakes recovered in the CSC comprised 31.9% of the chipped lithic artifacts and 16.6% of the total surface collection. This percentage is unusually high for a non-quarry site and suggests that, for whatever tool manufacture was occurring at the site, small stream gravels rather than previously reduced blanks were being utilized as cores. The overall flake density indicates that tool manufacturing activities at the site were minimal. All collected decortication flakes were chert.

Interior Flakes

Fifty-nine interior flakes were collected. In contrast to the decortication flakes they represented 24.7% of the chipped lithic artifacts and 12.9% of total surface collection. This low percentage suggests that very little tool manufacture was undertaken at the site. All but one of the interior flakes were chert. A single basalt flake was recovered from 65N/25E. Basalt was obtained from the St. Francis Mountains in central Missouri. There is no evidence of grinding or polish on the dorsal surface of this flake which might suggest function. Basalt was a favorite material for manufacturing celts.

Shatter

Shatter is a catch-all category for miscellaneous angular, blocky chipped lithic debris that lacks flake or core characteristics. Seventy-five pieces were collected, representing 31.2% of the chipped lithic assemblage and 16.3% of the total surface collection. All of this material was chert.

DENSITY OF SURFACE ARTIFACTS AT SC-A

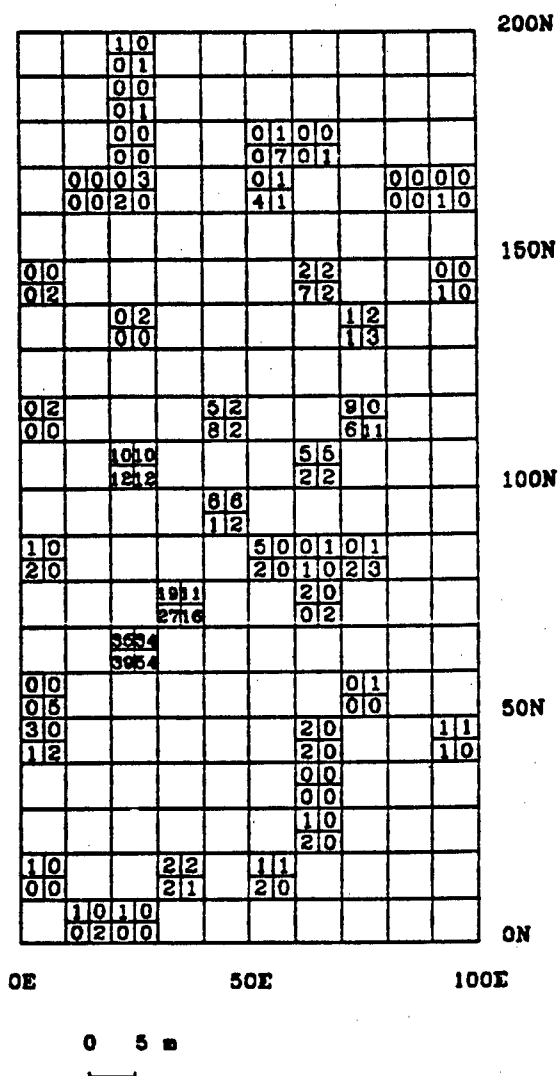


Figure 10. Density of Surface Artifacts at 23PM574.

Bifaces/Tools

Eleven bifacial tool fragments were recovered. All were recovered from within the core area of artifact dispersion. This is another catch-all category for all bifacially flaked items that are not assignable to a specific tool category or function. Most of the specimens are very crude and thick in cross-section and appear to be discarded preforms. Some of the fragments are

Table 4. Lithic Artifacts Recovered from the Controlled Surface Collection at 23PM574.

Artifact Class	Cores/ Tested Cobbles		Decortication. Flakes		Interior Utilized Flakes		Modified/ Shatter		Tool Fragments		Bifaces/ Points		Projectile		TOTAL	
	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.
0W/15R															0	0.0
5W/10R															0	0.0
10W/30R			1	0.1											1	0.1
10W/50R					1	0.6									1	0.6
15W/0R															0	0.0
15W/30R			1	0.2	1	0.1									2	0.3
15W/35R								2	0.4						2	0.4
15W/50R					1	1.2									1	1.2
15W/55R								1	0.1						1	0.1
20W/60R					1	0.1		1	2.3						2	2.4
25W/65R												1	1.7 a		1	1.7
40W/0R															0	0.0
40W/5R					1	1.6									1	1.6
40W/60R								1	3.0						1	3.0
40W/90R			1	1.7											1	1.7
45W/5R															0	0.0
45W/60R					1	2.4									1	2.4
45W/90R								1	0.1						1	0.1
45W/95R			1	0.2											1	0.2
50W/5R															0	0.0
55W/75R			1	5.4											1	5.4
60W/20R			1	1.9	5	1.1									6	3.0
60W/25R	2	150.0	6	3.6	7	3.3		1	0.7	2	23.2				18	180.8
65W/20R					6	0.7									6	0.7
65W/25R			4	11.3	1	29.0		4	7.5			1	2.0 b		10	49.8
70W/30R			2	7.2				9	6.6	1	9.3				12	23.1
70W/35R			5	4.4	5	1.3	1	0.6	3	2.4					14	8.7
70W/65R								1	0.2						1	0.2
75W/30R			2	1.9	2	10.3		3	2.2	2	42.0				9	56.4
75W/35R			4	4.8	2	5.8				2	26.6				8	37.2
75W/50R					1	0.1									1	0.1
80W/0R								1	1.7						1	1.7
80W/50R								1	0.4						1	0.4
80W/60R					1	0.1									1	0.1
80W/70R			1	2.5											1	2.5
80W/75R	1	10.1	2	1.7											3	11.8
85W/0R								1	0.1						1	0.1
85W/50R			3	2.0	1	1.0		1	1.0						5	4.0
85W/65R								1	15.0						1	15.0
85W/75R					1	0.1									1	0.1
90W/40R															0	0.0
90W/45R					1	0.7									1	0.7
95W/40R	1	24.8	3	3.3				1	2.7						5	30.8
95W/45R			3	3.6				3	3.7						6	7.3
100W/20R			3	1.1											3	1.1
100W/25R			3	3.5				6	6.2			1	2.0 c		10	11.7

Table 4 (continued). Lithic Artifacts Recovered from the Controlled Surface Collection at 23PM574.

Artifact Class	Cores/ Tested Cobbles		Decort. Flakes		Interior Flakes		Modified/ Utilized Flakes		Shatter		Bifaces/ Tool Fragments		Projectile Points		TOTAL	
Unit	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.
105N/20R			1	0.3	1	0.6	1	6.6							3	7.5
105N/25R			1	0.8	2	0.3									3	1.1
100N/60R									1	2.1					1	2.1
100N/65R															0	0.0
105N/60R			4	5.7							1	14.0			5	19.7
105N/65R			1	0.9	2	2.8			1	1.2					4	4.9
110N/40R	1	65.0	2	1.1	1	0.4			3	1.7					7	68.2
110N/45R					1	0.5									1	0.5
110N/70R			3	7.7	1	0.5									4	8.2
110N/75R			2	2.9					7	4.7	1	16.0			10	23.6
115N/5R									1	0.2					1	0.2
115N/40R			5	7.2											5	7.2
115N/45R			1	0.3					1	0.1					2	0.4
115N/70R			2	6.4					6	16.6					8	23.0
130N/70R									1	3.2					1	3.2
130N/75R					1	1.2					1	12.4			2	13.6
135N/25R					1	1.3									1	1.3
135N/70R					1	0.4									1	0.4
135N/75R			1	2.4	1	0.3									2	2.7
140N/5R	1	34.5			1	4.9									2	39.4
140N/60R	2	122.4	2	1.8	1	1.2			2	1.0					7	125.4
140N/65R	1	24.8	1	4.6											2	29.4
140N/90R													1	1.0 d	1	1.0
145N/60R											1	3.6			1	3.6
145N/65R					1	0.3							1	2.5 e	2	2.8
160N/20R	1	8.5	1	1.4											2	9.9
160N/50R					1	0.3			3	9.3					4	9.6
160N/55R															0	0.0
160N/90R			1	0.9											1	0.9
165N/25R			1	0.6					2	1.4					3	2.0
165N/55R															0	0.0
170N/55R					2	2.0			2	2.0			1	0.2 f	5	4.2
170N/65R									1	0.2					1	0.2
175N/55R					1	0.3									1	0.3
180N/25R									1	2.2					1	2.2
190N/25R					1	0.7									1	0.7
195N/20R									1	1.2					1	1.2
Total	10	440.1	76	105.4	59	77.5	2	7.2	75	103.4	11	147.1	6	9.4	239	890.1

* Wt./grams

Key to Abbreviations

a - Madison
b - medial fragment
c - Old Town Spike
d - distal tip
e - trianguloid fragment possibly Madison
f - distal tip

Table 5. Miscellaneous Artifacts Recovered in the Controlled Surface Collection at 23PH574.

Artifact Class	Fired Clay/ Daub		Fire-Cracked Rock		Ceramics		Bone		Historic		TOTAL	
Unit	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.
0N/15R							2	1.4 d			2	1.4
5N/10R	1	1.2									1	1.2
5N/20R	1	2.7									1	2.7
10N/30R			1	0.1							1	0.1
10N/50R			1	7.6							1	7.6
15N/0R							1	2.0 d			1	2.0
15N/30R											0	0.0
15N/35R											0	0.0
15N/50R											0	0.0
15N/55R											0	0.0
20N/60R											0	0.0
25N/65R											0	0.0
40N/0R	1	8.1									1	8.1
40N/5R	1	0.4									1	0.4
40N/60R									1	13.7 g	1	13.7
40N/90R											0	0.0
45N/5R	3	0.9									3	0.9
45N/60R	1	0.4									1	0.4
45N/90R											0	0.0
45N/95R											0	0.0
50N/5R	5	2.3									5	2.3
55N/75R											0	0.0
60N/20R	30	41.8			3	4.2 a					33	46.0
60N/25R	36	38.6									36	38.6
65N/20R	29	22.6									29	22.6
65N/25R	23	29.3			2	2.0 b					25	31.3
70N/30R	10	10.3			4	16.5 c					14	26.8
70N/35R	1	1.4									1	1.4
70N/65R					1	0.7 a					1	0.7
75N/30R	4	10.7	1	9.2	5	7.4 a					10	27.3
75N/35R	2	4.5			1	1.6 a					3	6.1
75N/60R							1	0.6 e			1	0.6
80N/0R					1	3.3 a					1	3.3
80N/50R									1	1.8 h	1	1.8
80N/60R											0	0.0
80N/70R							1	0.1 f			1	0.1
80N/75R											0	0.0
85N/0R											0	0.0
85N/50R											0	0.0
85N/65R											0	0.0
85N/75R											0	0.0
90N/40R									1	3.6 h	1	3.6
90N/45R			1	36.4							1	36.4
95N/40R					1	0.6 b					1	0.6
95N/45R											0	0.0
100N/20R	9	8.6									9	8.6

Table 5 (continued). Miscellaneous Artifacts Recovered in the CSC at 23PM574.

Artifact Class	Fired Clay/ Daub		Fire-Cracked Rock		Ceramics		Bone		Historic		TOTAL
Site #	Ct.	Wt. g	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.
100N/25R					2	1.0 a					2
105N/20R	6	4.0							1	2.2 i	7
105N/25R	6	7.5			1	0.7 b					7
100N/60R	1	0.3									1
100N/65R									1	0.3 h	1
105N/60R											0
105N/65R					1	0.7 a					1
110N/40R	1	1.1									1
110N/45R	1	0.7									1
110N/70R	2	0.9									2
110N/75R					1	0.9 c					1
115N/5R	1	8.0									1
115N/40R											0
115N/45R											0
115N/70R					1	2.2 b					1
130N/70R											0
130N/75R					1	1.1 b					1
135N/25R	1	0.1									1
135N/70R											0
135N/75R											0
140N/5R											0
140N/60R											0
140N/65R											0
140N/90R											0
145N/60R					1	1.1 b					1
145N/65R											0
160N/20R											0
160N/50R											0
160N/55R					1	1.1 c					1
160N/90R											0
165N/25R											0
165N/55R					1	0.8 c					1
170N/55R	2	0.3									2
170N/65R											0
175N/55R											0
180N/25R											0
190N/25R											0
195N/20R											0
Total	178	206.7	4	53.3	28	46.5	5	4.1	5	21.6	220

g Weight/grams

Key to Abbreviations

a - grog and shell tempered	d - turtle shell	g - stoneware
b - grog tempered	e - human tooth	h - glass
c - shell tempered	f - unidentified bone	i - brick

from bifacial tools such as knives or possibly dart points. One specimen is a small trianguloid biface made from a highly tripolized tan and white chert. The distal tip is missing. It has a straight base and convex blade margins. Since it is of such poor quality chert, and as a consequence has been rather crudely flaked, it has been classified as an aborted arrow point preform. All but one of the biface fragments were made of chert. One specimen was manufactured from orthoquartzite, also available in Crowley's Ridge.

Projectile Points

All of the identifiable projectile points collected were arrow points or arrow point fragments. Of the six specimens collected, only three are intact enough for identification. Two are Madison points and the third is an Old Town Spike. These varieties suggest a Late Mississippi Nodena phase occupation, as do the ceramics. One additional unidentified arrow point was located at grid location 68.1N/56.1E. All of the specimens are chert.

Fired Clay and/or Daub

Fired clay and/or daub was the most commonly collected artifact type. One hundred seventy-eight fragments, comprising 38.8% of the total surface collection were recovered. This artifact category is considered somewhat suspect due to the difficulty in distinguishing between actual daub and fired clay derived from burning off crop residues or trees during land clearance. This concern is enhanced considering the very high clay content of the subsoil at 23PM574. On the other hand, even though fired clay/daub accounts for most of the variation in artifact count in the high density CSCs, lithic and ceramic counts in these units tend to be higher as well, suggesting that it is a valid artifact category.

Ceramics

Twenty-eight small, badly weathered ceramic artifacts were recovered in the CSC. Fourteen were grog and shell tempered, seven shell tempered and seven grog tempered. Only one displayed any evidence of decoration or surface treatment. It is a grog and shell-tempered specimen with a triangular raised area containing nodes, possibly representing a handle or effigy fragment. A grog tempered rim sherd was located outside the CSC at grid location 135N/65E. All other specimens are body sherds. The sherds are representative of the Baytown Plain, Mississippi Plain, and Bell Plain ceramic types. They suggest Late Woodland Baytown and Late Mississippi Nodena phase occupations.

Fire-cracked Rock

Only four lithic items identifiable as fire-cracked were found in the CSC. Fire-cracked cobbles are normally associated with indirect cooking or heating tasks in preceramic contexts. The low density of this artifact type is consistent with the periods of occupation suggested by the ceramic artifacts.

Bone

Little bone was present. Of the five items collected, three are turtle shell fragments, most likely of recent origin; one is a fragment too small to classify. The only important find was the enamel portion of a human tooth.

The tooth is a right maxillary second molar. Only the crown remains, all other elements (i.e., dentin and cementum) having disintegrated. The enamel is ivory-white in color. The occlusal surface is slightly worn and contact facets are present on the mesial and distal surfaces. The tooth is free of carious and hypoplastic lesions. Remnants of calculus deposits are present on the mesial and buccal surfaces.

Morphologically, the tooth is characterized by a "4" cusp pattern, the hypocone being quite large. There is, in addition, a cuspule (metaconal) between the metacone and hypocone. Carabelli's trait is present in the form of a Y-shaped groove. Distal to the groove is a pit and faintly defined groove extending to the Y-shaped groove.

It is impossible to make any attribution of gender based upon one tooth. And only a rough determination of age is possible. The contact facet on the distal surface of the tooth indicates that the third molar had erupted and been in contact with the second molar. Therefore, the age at death of this individual was greater than 18 years of age. No determination of racial affiliation is possible based upon the remains present for analysis. Although Carabelli's trait is most commonly associated with European populations, the trait is also found in Native American groups. From the above information, then, the human remains recovered at 23PM574 can only be characterized as those of an adult, no other reliable conclusions being possible.

Historic

Historic items were sparse in the site area. Three glass fragments, one brick fragment and one stoneware sherd were recovered in the CSC. One of the glass fragments is solarized. In spite of the presence of a few historic artifacts there is no evidence to suggest that there has ever been a historic occupation or structure at the site. Low densities of historic materials are quite common in agricultural fields throughout the area.

Summary

The artifact assemblage recovered during the CSC indicates that the occupation(s) at 23PM574 date to the Late Woodland and Late Mississippi time periods. Baytown and Nodena phases are suggested. The nature of the occupation appears to have been one of short term, and limited activity, such as a campsite. This can be assumed from the paucity of cultural debris and limited nature of the tool inventory. Limited tool manufacture and maintenance are reflected in the amount and type of chipped lithic debris recovered as well as the presence of broken, discarded arrow points. There is little substantive evidence to suggest the presence of a long term habitation. Ceramics and daub are present but in very small quantities, and there are no midden deposits.

TEST INVESTIGATIONS

Information obtained by the CSC was used to determine the location of Test Unit 1 and Posthole Tests 1 and 2. Although the overall site dimensions were determined to be 193 m x 93 m, the area of artifact concentration was much smaller as indicated in Figure 10. Assuming the core area is the primary site locus, the densities show significant amounts of longitudinal displacement of artifacts along the tillage rows. In a study of this phenomenon under

controlled conditions, Lewarch and O'Brien (1981:7-49) reach the following conclusions:

To summarize short term tillage displacement of artifacts, significant differences in pattern size are found when comparing vertical dimensions between control pattern and tilled pattern. Vertical changes in pattern size are caused by longitudinal displacement, or dispersion in the direction of equipment movement. Increases in the number of tillage operations produce significant differences in the amount of longitudinal displacement between tillage treatments. There is no significant difference in horizontal dispersion between treatment and control patterns or within tillage treatments.

Based on this information, areas outside of the core area were eliminated from testing consideration. It was decided to place Test Unit 1 in the area of highest artifact density. The effectiveness and reliability of using surface artifact distributions as an indicator of subsurface deposits has been discussed at length in the literature (Binford et al. 1970, Redman and Watson 1970, Roper 1976, Lewarch and O'Brien 1981, Madsen and Dunnell (1989). Redman and Watson (1970:279) state the issue succinctly:

Archeologists assume, consciously or unconsciously, that there is some relationship between what can be found on the surface of a site and what lies below. However, there is disagreement as to the nature of this relationship: is it systematic and understandable, and thus worth establishing; or is it random and inscrutable and consequently not worth investigating?

In an effort to test the hypothesis that the proportions and kinds of artifacts on the surface are directly related to their distribution in the subsurface matrix, Redman and Watson (1970:290) correlated the assemblages from controlled surface collection and excavations at two sites in Turkey:

In conclusion, we emphasize the value of data gained from systematic, intensive surface collection as an aid to problem-oriented research designs and to the knowledgeable excavation of low featureless mounds like Cayönü and Girik-i-Hacıyan. ... Use of this method (wherever feasible), or of some modification of it, contributes to the efficiency and effectiveness of archeological research and broadens the scope of problems that can be investigated by archeologists.

Subsurface Investigations

The two primary objectives of the subsurface investigations were to determine the nature and depth of subplowzone deposits, and to document the extent and depth of disturbance caused by subsoiling. Prior to the start of testing, Mr. Terry Smith, the landowner's son, informed the field crew that the site area was subsoiled once a year to a depth of 26 inches (66 cm).

Test Unit 1 was placed in the core area at grid coordinates 70.8N/44.1E (Figure 11). It was excavated in arbitrary 10 cm levels to a depth of 70 cm

below ground surface. From 60 to 70 cm, only the western half of the unit was excavated. In levels 1, 2, and 3, all excavated matrix was passed through a 1/4 inch mesh screen. Below that the soils contained too much clay to pass through the screens. At these levels the excavated matrix was placed on the screens, broken apart, and examined by hand. Standard MCRA level sheets were kept for each excavated level. These record excavation techniques, nature of soil matrix, notes on artifact content and features, as well as a list of assigned field serial numbers.

A flat-nosed shovel and trowels were used to excavate levels 1 and 2. Subsequent levels were excavated primarily with pick mattocks. At the completion of excavation, the north profile was photographed and drawn (Figure 11).

Results of Testing

Stratigraphy. Figure 11 shows the soil profile revealed during the excavation of Test Unit 1. The plowzone soil was a dark brown (10YR3/3) silty clay loam, mottled with very dark gray (10YR3/1) to very dark grayish brown (10YR3/2). Its base ranged between 20 cm and 32 cm in depth. The subsoil was a very dark gray (10YR3/1) clay loam which extended to at least 10 cmbs, becoming bluer with increasing depth. Several vertical lenses of plowzone soil were observed in the unit wall. Some of these extend down from the plowzone, while others are contained completely within the subsoil. They appear to be drying cracks that have been filled in by plowzone soils. They might also have been caused by a subsoiler. The 4-cm-wide lens at the western edge of the north wall, that extends from the bottom of the plowzone to the bottom of the unit is undoubtedly the result of subsoiling. These lenses were not observed during the excavation of the unit, due to the very rough surface produced by the pick mattock. They became evident when the north wall of the unit was cleaned and scraped for profiling. The soils encountered in Test Unit 1 most closely resemble the typical profile of Commerce silt loam.

North Profile

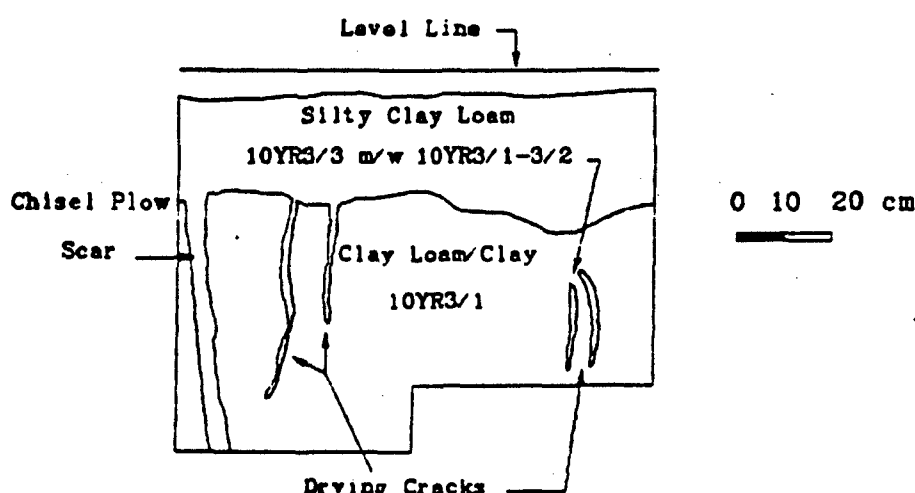


Figure 11. Test Unit 1 profile of 23PM574.

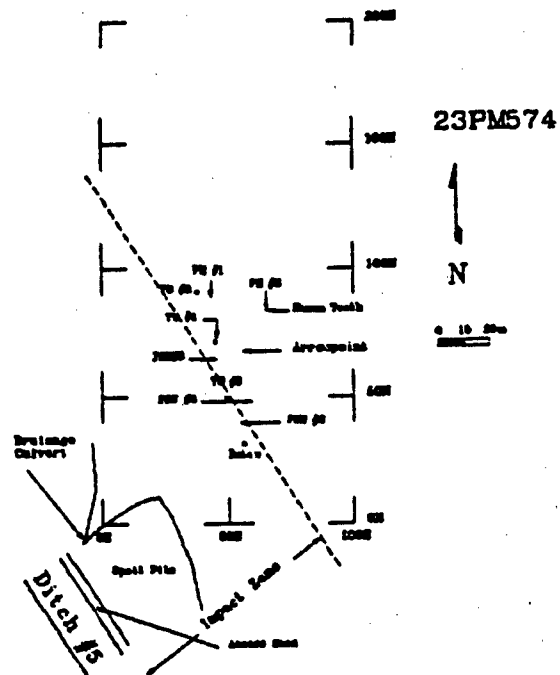


Figure 12. Site map of 23PM574.

Artifacts. Test Unit 1 produced cultural materials only in Levels 1 and 2 - the upper plowzone (Tables 6 and 7). Level 1 (0 - 10 cm below the surface) contained 20 artifacts. The majority of this material consisted of fired clay/daub and chert flakes. Two shell-tempered sherds were also recovered. Level 2 (10 - 20 cm below surface) contained only four artifacts, two shell-tempered sherds, a piece of fired clay/daub and a fragment of shatter. No artifacts were recovered below 20 cm.

Table 6. Lithic Artifacts Recovered from Excavation and General Surface Collection at 23PH574.

Artifact Class	Cores/ Tested Cobbles		Decort. Flakes		Interior Flakes		Modified/ Utilized Flakes		Shatter		Bifaces		Dart Points		TOTAL	
	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.
Unit																
100N/OR													1	1.1a	1	1.1
TU1 0 - 10 cm	1	6.7	1	0.8	5	2.3			2	2.1					9	11.9
TU1 10 - 20 cm									1	0.1					1	0.1
General Surface	7	235.7	6	29.5	3	6.2	4	22.1	9	72.1	4	38.9	3	8.3 b	36	412.8
TU2 0 - 10 cm			6	5.4	4	1.7									10	7.1
TU2 10 - 15 cm					1	1.0									1	1.0
TU3 0 - 10 cm			3	.6	1	.1									4	.7
TU3 10 - 20 cm					1	.9									1	.9
Gen'l SurfaceII	2	24.5	16	35.9	45	30.4	3	10.8	26	48.6	4	67.9	4	10.8	100	228.9
TOTALS:	10	266.9	32	72.2	60	42.6	7	32.9	38	122.9	8	106.8	8	20.2	163	664.5

g Weight /grams

Key to Abbreviations

- a - unidentified arrow point
- b - Modena, Madison, basal fragment
- c - unidentified PPKs

Table 7. Miscellaneous Artifacts Recovered from Excavation and General Surface Collection at 23PH574.

Artifact Class	Fired Clay/ Daub		Fire-Cracked Rock		Ceramics		Other		TOTAL	
	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.	Ct.	Wt.
Unit										
135N/55B					1	0.7 a			1	0.7
69N/60B					1	4.2 b			1	4.2
TU1 0 - 10 cm	7	2.0	2	4.7	2	0.9 b			11	7.6
TU1 10 - 20 cm	1	0.3			2	0.3 b			3	0.6
General Surface	1	2.5			3	6.1 c	2	10.0 d	6	18.6
TU2 0 - 10 cm	26	21.0			1	3.3			27	24.3
TU2 10 - 15 cm	23	12.5			1	2.7			24	15.2
TU3 0 - 10 cm	9	2.4							9	2.4
TU3 10 - 20 cm										
Gen'l SurfaceII	81	127.9			29	61.3 e			110	189.2

TOTALS: 148 168.6 2 4.7 40 79.5 2 10.0 192 252.8

Key to Abbreviations:

- a - grog-tempered
- b - shell-tempered
- c - 1 sand-tempered, 2 grog- and shell-tempered
- d - glass
- e - 28 grog- and shell-tempered; 1 grog-tempered

Posthole Tests

In addition to Test Unit 1, two posthole tests were excavated to help verify the depth of the cultural deposits and look for buried deposits. Posthole Tests 1 and 2 were located within the core area at grid locations 88.8N/42.9E and 83.6N/65.2E, respectively (Figure 12). Both postholes were excavated to a depth of 80 cm. Excavated matrix was placed in a 1/4 inch mesh screen and either passed through the screen or broken up and examined by hand. No cultural material was recovered from either test and the soils were the same as described for the test unit.

General Surface Collection

Following the completion of subsurface investigations a general surface collection was taken. The purpose of the general collection was to supplement the CSC and to recover temporally and/or functionally diagnostic artifacts. The bulk of the general collection consists of chipped lithic debris and fired clay/daub (Tables 6 and 7). Diagnostic artifacts collected include a Nodena point, a Madison point, two grog-and-shell-tempered sherds and a cordmarked sand-tempered sherd. The cordmarked sherd is the only indicator of a Late Woodland period Dunklin phase occupation at the site.

Mapping

The final task undertaken at 23PM574 was limited plan view mapping. The map was prepared using a Brunton pocket transit and a 100 m tape. All relevant physiographic and cultural features were mapped, as were locations of the CSC grid, test unit, postholes, flagged diagnostic artifacts, and survey phase FSN locations.

23PM574 Revisited

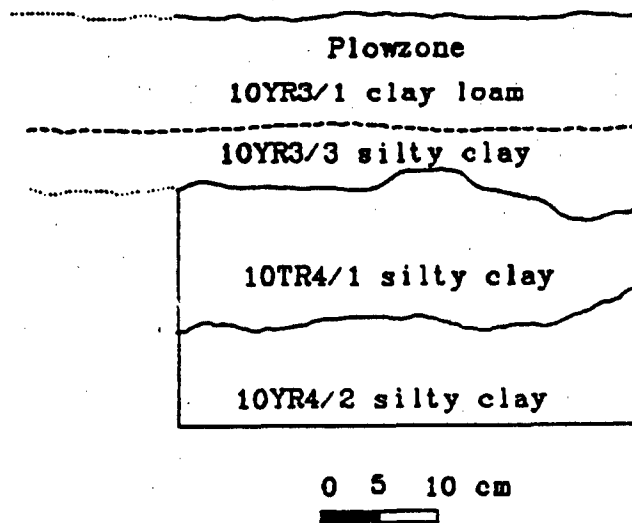
On January 15, 1990, MCRA revisited the site. The original grid was duplicated, and two more test units were excavated in order to collect additional data. Following the completion of the subsurface investigations another general surface collection was taken.

Based on the assumptions used for determining the location of Test Unit 1, Test Unit 2 (Figure 13) was also placed within the core area at 88N/35E. It was excavated in arbitrary 10 cm levels to the base of the plow zone at 15 cms and then in 10 cm units to 35 cms. All materials were screened through quarter inch mesh screen. Standard recording methods were utilized as for Test Unit 1. The south profile was photographed and drawn.

Test Unit 3 (Figure 13) was intentionally excavated in an area not included in the area of high artifact density. It was placed in unit 49N/50E south of

23PM574 Test Unit 2

South Profile



23PM574 Test Unit 3

South Profile

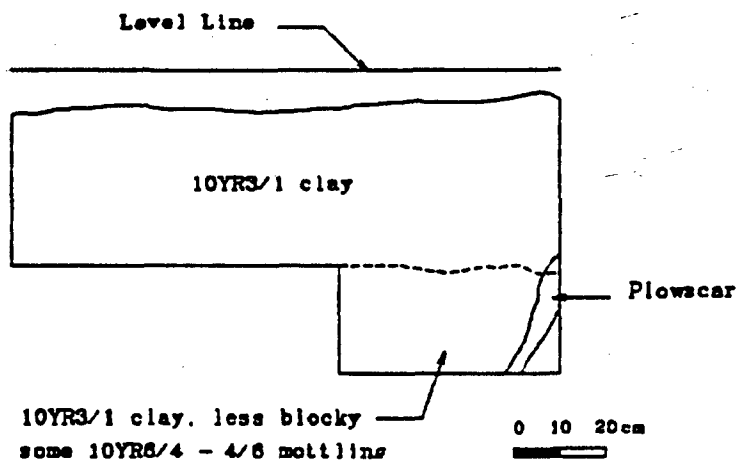


Figure 13. 23PM574, Test Units 2 and 3.

the core area. Again, 10 cm levels were excavated to 50 cmbs. Procedures were as above.

Results

Test Unit 2 was very similar in appearance to Test Unit 1. The plowzone level, from 0-15 cm, was a dark brown (10YR3/3) silty loam mottled with very dark gray (10YR3/1). At 15-20 cm, the subsoil was a brown (10YR4/1) clay loam to 18-23 cm and gray brown (10YR4/2) silt clay to the base. The lenses were not distinct during excavation. Cultural materials were found in 0-10cm and 10-15 cm levels (Tables 6 and 7).

Test Unit 3 was located on the descending slope of the site. To a depth of 32 cm the soil was clay loam to clay, very dark gray (10YR3/1). At this depth the clay soil became lightly mottled with (10YR5/4). At 40 cm, a 40 cm by 40 cm unit was excavated to 50 cm, the base of the unit. Artifacts were recovered from the first 12 cm (two levels) (Tables 6 and 7).

The general surface collection was composed of chipped lithics and fired clay/daub. Visibility was 80-100%. Diagnostic artifacts recovered from the general collections included a cord marked sand tempered sherd and 25 grog-shell tempered sherds. Also recovered were a grog-shell tempered polished sherd with applique below the lip and a punctated grog-shell rim sherd. The test units and separately cataloged diagnostic artifacts were located on the original plan view map (Figure 12).

SUMMARY AND RECOMMENDATIONS

MCRA investigations at 23PM574 indicate occupations to the Late Woodland and Late Mississippi time periods. Baytown, Nodean, and, possibly, Dunklin phase occupations are suggested by the artifact assemblage. The nature of the occupation appears to have been one of short-term and limited activity, such as a campsite. This can be assumed from the paucity of cultural debris and limited nature of the tool inventory. Limited tool manufacture and maintenance are reflected in the amount and type of chipped lithic debris recovered as well as the presence of broken discarded arrow points. There is very little substantive evidence to suggest the presence of long-term habitation. Ceramics and fired clay daub are present but in very small quantities, and there are no midden deposits.

Test investigations indicate that the cultural deposits are confined to the plowzone. No cultural material was recovered below 20 cm and no evidence of buried deposits was found. Although a human tooth found suggests the presence of burials, no evidence of this or any other type of cultural feature was found. That the tooth was found on the surface indicates that any possible burials have already been disturbed and destroyed by discing. This is supported by the condition of the tooth. Since only its enamel remains, poor preservation conditions are indicated. Nor was any other bone found that could be definitely related to prehistoric occupation. Additionally, extensive disturbance to the site, in the form of subsoiling to depths exceeding 70 cm, has been documented.

The natural context of the site makes it highly unlikely that there was ever more than seasonal occupation. Gray and blue clays are characteristic of periodic standing water. Even though this has a veneer of point bar sediment,

the soil color indicates that the land has experienced at least seasonal swamping since its formation.

For these reasons, 1) extensive plowing, 2) extensive subsoiling, and 3) low probability of anything but seasonally restricted occupation, it is highly unlikely that intact cultural materials are present at 23PM574. In MCRA's opinion, 23PM574 lacks integrity and is not otherwise significant in terms of National Register criteria. No further archeological work is recommended.

INVESTIGATIONS AT 23PM575

23PM575 (Figure 14) was discovered on the interior slope of the spoil pile north of Ditch No. 5. It consists of two sherds located within a 10 square meter area. Since adjacent fields to the north were flooded at the time of discovery, it could not be determined if the cultural material on the spoil pile was from a site in the field that had been partially buried by the levee or whether the artifacts represented buried materials that had been dredged up from the ditch. MCRA investigations at 23PM575 were directed at making this determination.

SURFACE INVESTIGATIONS

The initial step in the surface investigation was to relocate the site. The surface visibility was very poor due to recent cultivation, and no cultural material could be located in the suspected site location. To verify the site location a 100 m tape was used to precisely measure the distance from an adjacent lateral field drainage noted in the survey notes. Once this was done the field crew was able to locate flagging tape, which marked the site in the undergrowth on the ditch bank.

The site area was carefully surveyed on foot along the crop rows in a southwest to northeast direction. Transects were spaced at approximate two meter intervals and were approximately 100 meters long. No additional artifacts were found. This same procedure was used in the agricultural field to the west and northwest of the site area. This area was surveyed after substantial rain had fallen and surface visibility was excellent. No cultural material was located.

SUBSURFACE INVESTIGATIONS

Subsurface investigations were restricted to posthole testing. Posthole Tests 1 and 2 were placed on the interior of the spoil pile (i.e. ditch side) at the junction of the ditch bank and the raised levee surface. This was as close to the original land surface as was accessible. The two tests were spaced 10 m apart and were excavated to depths of 1 m and 90 cm respectively. The excavated matrix was placed in a 1/4 inch mesh screen and either passed through the screen or broken up and examined by hand.

Posthole Test #1 produced bone fragments and cannel coal at 40 cm below the ground surface. No definite cultural material was recovered. The surface layer was a dark gray (10YR4/1) clay mottled with dark brown (10YR4/3), extending to 35 cm. Below this there was a dark brown (10YR3/3) crumbly sandy clay loam to 66 cm. This was underlain by a brown (10YR5/3) sand.

Posthole Test 2 had an identical profile to a depth of 70 cm. From 70 cm to 90 cm there was dark gray (10YR4/1) clay loam mottled with strong brown (7.5YR4/6) and containing abundant organic matter. No cultural material was recovered.

The soil profiles revealed in Posthole Tests 1 and 2 indicate that the original ground surface was never reached and that any cultural material present has been secondarily deposited.

Posthole Tests 3 and 4 were placed in the agricultural field northwest of the site area. Both were excavated to a depth of 70 cm. No cultural material was recovered. The soil profiles in both tests were identical to what was encountered in Test Unit 1 at 23PM574 - that is, a dark brown (10YR3/3) silty clay plowzone underlain by a very dark gray (10YR3/1) clay loam.

23PM575 Revisited

On January 14, 1990, MCRA returned to 23PM575 to excavate a test unit to reevaluate the status of the site. The site was relocated and the area examined for a surface collection. Visibility was 100%. No artifacts were observed.

Test Unit 1 (Figure 15) was located at the interface of the spoils pile and field. All materials were screened through a one-fourth inch mesh screen. From 0-15 cm a thin sand level capped a very dark grayish brown (10YR3/2) clay loam. Some channel coal was recovered in this level. From 15-25 cm was a 10YR4/4 sandy silt followed by a 10YR4/4 clay.

The test unit site was mapped. No artifacts were recovered.

RESULTS AND RECOMMENDATIONS

Based on the results of surface examination and posthole testing, MCRA has determined that 23PM575 represents a site that 1) has been buried by the existing levee, 2) is buried and is being disturbed by ditch and levee construction, 3) has been eradicated by previous ditch construction, or 4) had its sherds transported from elsewhere. The soil type (Hayti silt clay loam) is found at the bottoms of natural lakes. Given this, it is most likely that the sherds were transported from elsewhere. There is evidence to indicate that the site does not extend into the adjacent agricultural fields to the north and west.

MCRA recommends that the site area be avoided in all subsequent ditch and levee construction activities. If avoidance is not possible, deep testing should be undertaken to determine the nature and extent of the buried resources and adequate mitigation of adverse impacts conducted.

INVESTIGATIONS AT 23PM578

This site was situated on a low ridge, trending north to south, and composed of Portageville clay. Portageville clay is deposited on lake bottoms and swamps in the Lower Mississippi Valley. It had a low density of artifacts on the surface. Archeological investigations included flagging and point plotting all surface artifacts and excavating two control columns.

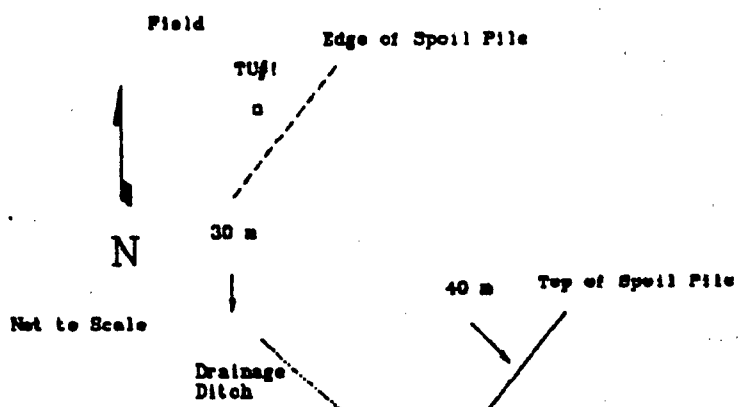


Figure 14. 23PM575 site map.

23PM575 Test Unit 1

West Profile

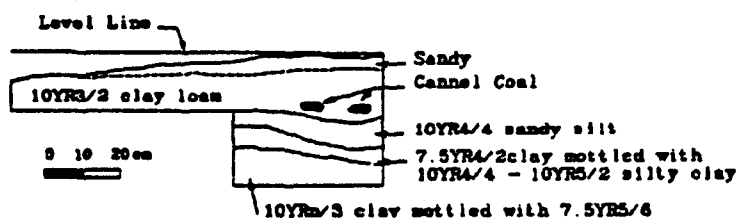


Figure 15. 23PM575, Test Unit 1.

At the time of investigations in early April, the site was fallow with 80-90% surface visibility. The site was systematically crisscrossed by a crew of four for thirty minutes and all potential artifacts were flagged. Twenty-two artifacts and other cultural objects were recovered and mapped on the surface.

Most of the artifacts were centered on the tip of a ridge (Figure 13), covering a 20 m x 30 m area. Except for FSN 23, a flake at the extreme north end of the site, the prehistoric material was concentrated within this area. Prehistoric artifacts included nine flakes, shatter, one core, and a projectile point. Historic artifacts included an iron fragment and a whiteware sherd. Other potential cultural objects included four daub fragments, two bone fragments, and an unmodified cobble.

The projectile point is a Madison point made of white chert. The tip is broken and part of that break was later utilized as a scraper. This point indicates use of this site in the Middle to Late Mississippi periods.

Table 8: Lithic Types.

	Core	Flakes		Total	Retouched/utilized
Count	1	Decortication 4	Interior 6	11	6
Per cent	9.1	36.4	54.5	100	54.4

The lithic assemblage is mainly composed of Crowley's Ridge chert, most of which has indications of being small pieces. However, the pieces are not the same color and texture, and none cross mended. This suggests a minimum of eleven cores or tools on the site (Table 8). All of the flakes greater than one centimeter show signs of utilization as scrapers and spokeshaves. One white crianoideal flake has extensive heavy polish on one surface. The two largest decortication flakes suggest that a core may have been carried as a source for quick scrapers and spokeshaves. One interior flake of Kaolin chert (Illinois) has edges utilized as spokeshave, scraper, and perforator.

The heavy utilization of these flakes is typical when compared to other Central Mississippi Valley sites (Lafferty 1989:Table 4.9). While other sites have lower percentages of utilized flakes, all exceed 5% and some approach 34%.

The cannel coal is a very small (1.7 cm) pebble which is probably natural. Such pebbles have been observed by the author in gray clays elsewhere in the river basin (Lafferty et al. 1985a: B8 - B15).

Two bone fragments, each less than two centimeters, are small pieces of large mammal long bone. Their surfaces have some slight iron oxide stain which suggests they could be prehistoric.

The large unmodified cobble is Oolitic chert and is a size commonly found in road gravels.

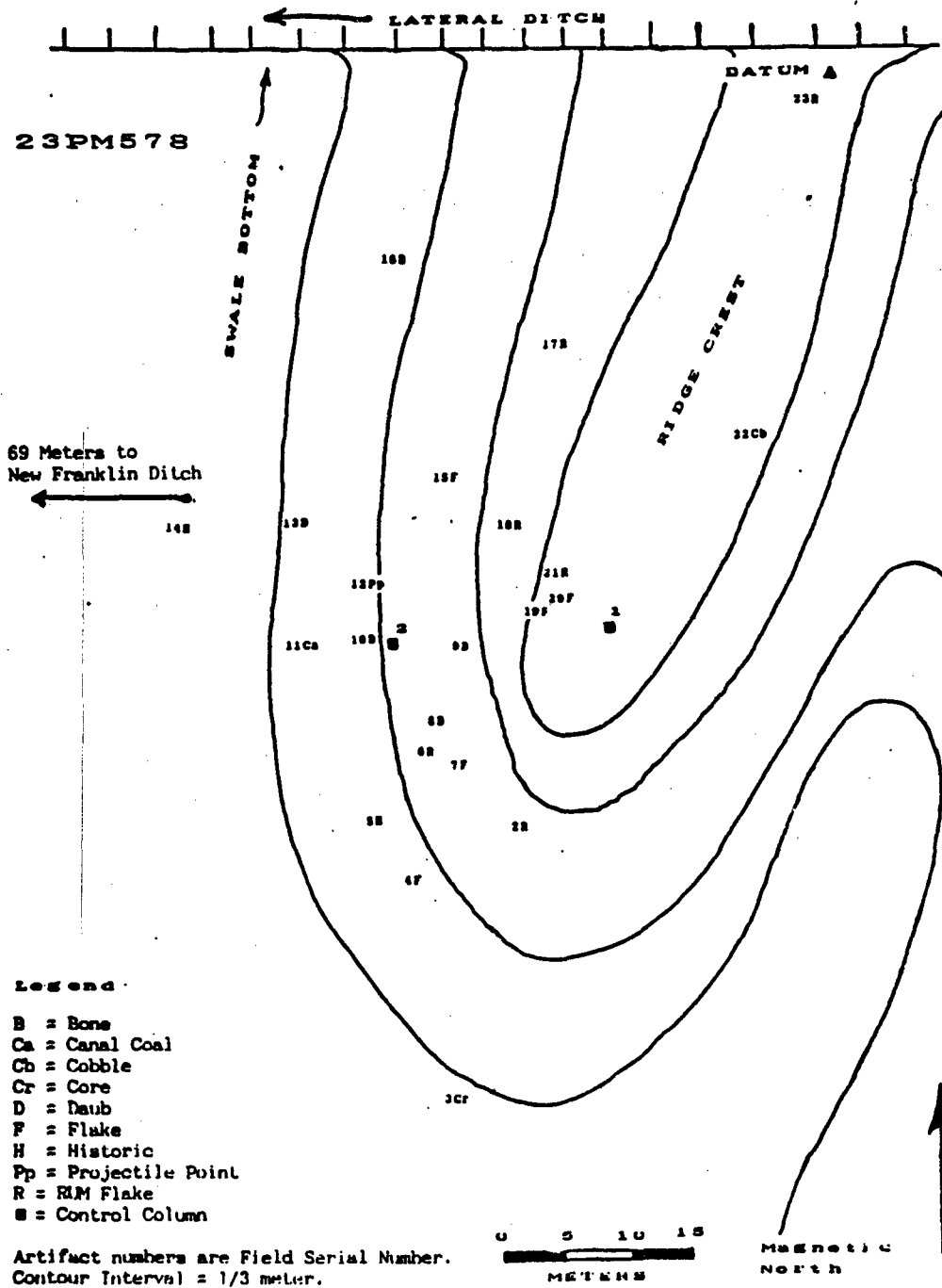


Figure 16. 23PM578 site map.

One small whiteware sherd and one fragment of cast iron stove were the Euro-American artifacts.

Control Columns

Two control columns were excavated. While MCRA attempted to screen the heavy clays, they were so sticky that trowel cutting was the best that could be managed. The clay was thrown onto the screen and laboriously cut through with trowels. No artifacts were recovered.

Control Column 1 was excavated on the crest of the ridge (Figure 16). The 25-cm-thick plowzone (Figure 17) was a gray (10YR4/2) mottled clay. This was underlain by a dark gray clay (10YR4/1), which was very gleyed.

Control Column 2 was excavated on the slope near the concentration of supposed daub. This had a profile (Figure 17) similar to Control Column 1, except there was a thin band of grayish-brown (10YR5/2) sand at the base of the plowzone.

The total excavated volume was 0.675 cubic meters. The total artifact density is less than 14.8 artifacts per cubic meter. The surface density is .03 artifacts per square meter. These are extremely low densities.

Cultural Interpretation

This site has the appearance of a seasonal hunting station. The gray clays are characteristic of seasonally inundated areas and this low-lying area is in the upper reaches of what was mapped as a swamp in the GLO records.

23PM578 Revisited

Site 23PM578 was revisited on January 15, 1990. The datum was located and the site parameters reestablished. A test unit was excavated and the surface reexamined for more data. Visibility was 90-100%.

Test Unit 1 (Figure 18) was located on the west descending slope, in the area of artifact concentration. It was excavated in 10 cm levels using a flat edge shovel from 0-10 cm and a pick maddock to the base. Level 1 was very dark grayish brown silty clay. From 10-30 cm, the soils were a very dark gray (10YR4/1), gleyed clay. A subtle difference in soil structure was noted at 25 cm. The clay became less blocky and lightly mottled with (5YR4/6). From here to the base of the unit at 45 cm were (7.5YRn/2) clays mottled with (5YR4/6).

No cultural materials were observed during the surface inspection or in the test unit excavation.

NRHP Significance

23PM578 has no indication of intact deposits below the plowzone. The gleyed soils suggest it was not occupied year round, reducing, or more likely precluding, the possibility of subplowzone features. The plowzone has been disturbed. Coupled with the extremely low artifact density, which was extensively sampled in the CSC made during testing, data remaining in this site are redundant. This site lacks integrity and possesses no characteristics

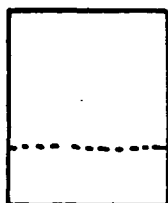
which would make it significant in terms of Criterion d of the NRHP.

Recommendations

No further archeological work is recommended at this site.

23PM578

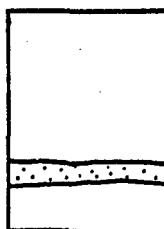
CONTROL COLUMN 1
North Profile



Gray (10YR4/2) Mottled Clay

Dark Gray (10YR4/1) Clay

CONTROL COLUMN 2
North Profile



Gray (10YR4/2) Mottled Clay

Brown (10YR4/2) Sand

Dark Gray (10YR4/1) Clay

0 30
CENTIMETERS

Figure 17. Profiles of Control Columns at 23PM578.

23PM578 Test Unit 1

North Profile

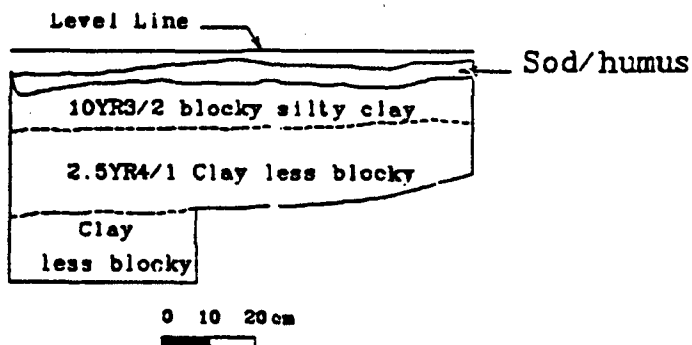


Figure 18. 23PM578, Test Unit 1.

INVESTIGATIONS AT 23PM577

Seven flakes were discovered during the survey of this site which is on a slight (20 cm high) sandy rise in a cultivated field. The low area south of the site was wet when discovered. Its soils much lighter in color than the surrounding clay, they were mapped as Cooter and Crevasse silty clay loam. The test unit (see below) was the Cooter soil series, a slackwater-deposited soil.

Archeological testing included a point-plotted controlled surface collection and excavation of a 1 m x 1 m test unit. The CSC recovered 34 flakes tightly clustered on the slightly higher sand spot. Twenty-two (65%) of the flakes were in a 15 m x 15 m area, in which the test unit was centered.

Eighteen (53%) flakes were decortication flakes, mainly from small Crowley's Ridge pebbles. Eight of these were probably from the same pebble, based on the chert structure, unique non-cortical color, and similar cortex development (noted by an "*" on Table 9). The remaining flakes are so different from each other that they probably came from different nodules. Four (12%) flakes, all larger than 1.5 cm, exhibited wear or utilization. No exotic flakes or diagnostic artifacts were identified; one projectile point tip was recovered, but it prohibits classification as either arrow or dart.

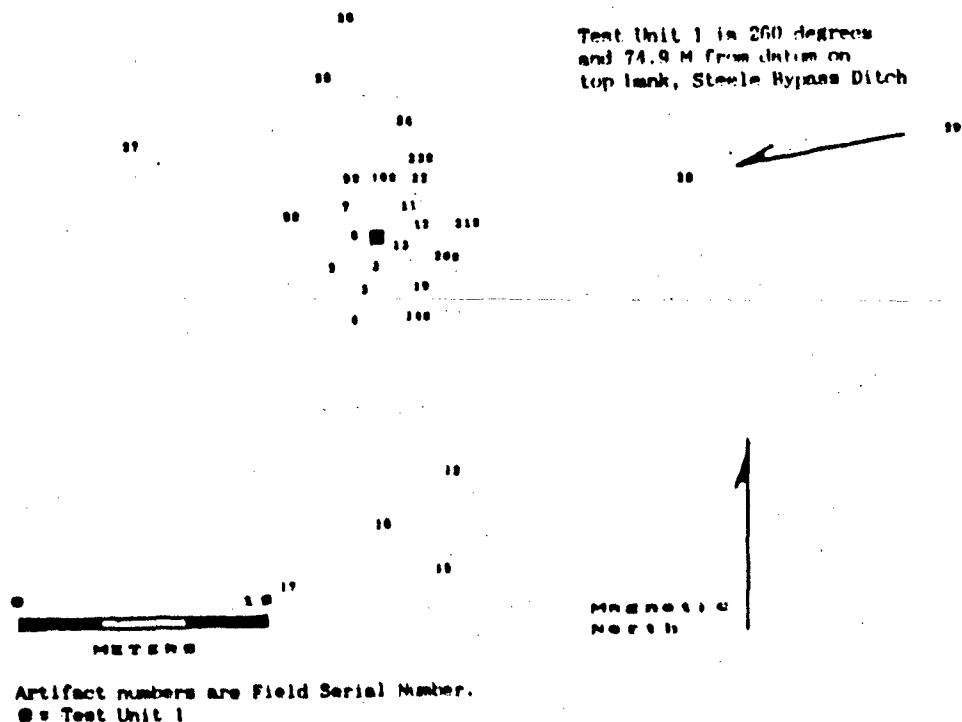


Figure 19. 23PM577 site map.

Table 9. Artifacts Recovered at 23PM577.

Provenience	FSN	Artifact	Count	Weight (grams)
TU-1, 0-15	1	Flake: Decortication	2	1.4
	2	Interior	1	.9
CSC	2	Interior	2	.3
	3	Interior	1	.3
	4	Interior	1	.3
	5	Interior	1	1.8
	6	Decortication	1	2.3
	7	Cannel Coal	1	5.3
	8	Flake: Decortication *	1	1.8
	9	Decortication *	1	.7
	10	Decortication *	1	.7
	11	Interior:	2	.8
	2	Rum	1	1.0
	12	Pebble: Tested	1	4.3
	2	Flake: Decortication: Qtz	1	1.9
	3	Chert	1	.4
	13	Flake: Interior	1	.3
	14	Debitage: Decortication *	1	5.0
	15	Flake: Interior: RUM	1	.4
	16	Flake: Decortication	1	1.4
	17	Interior	1	.5
	18	Debitage: Interior	1	.3
	19	Decortication	1	1.2
	20	Flake: Decortication *	1	.5
	21	Debitage: Decortication *	1	.3
	22	Flake: Interior	1	.1
	23	Debitage: Decortication *	1	.7
	24	Interior	1	.6
	25	Flake: Decortication	1	1.9
	26	Decortication: RUM	1	3.2
	2	Interior	1	.1
	27	Debitage: Decortication	1	.4
	2	Projectile Point, Distal	1	.8
	28	Flake: Interior	1	.8
	29	Interior	1	.3
	2	Decortication Rum *	1	2.3

* Chert which appear to have been from the same nodule. All artifacts of Crowley's Ridge chert unless otherwise noted.

The test unit was excavated to 50 cm below surface (Figure 20). Three flakes were recovered in the 15 cm thick plowzone. This gives an average artifact density for the plowzone of 27 per cubic meter. The plowzone is a dark grayish-brown (10YR4/2) clayey sand. This was underlain by a gray (10YR5/1) clay mottled with dark yellowish-brown (10YR4/6) clay. Below this was a grayish-brown (10YR5/2) clayey sand.

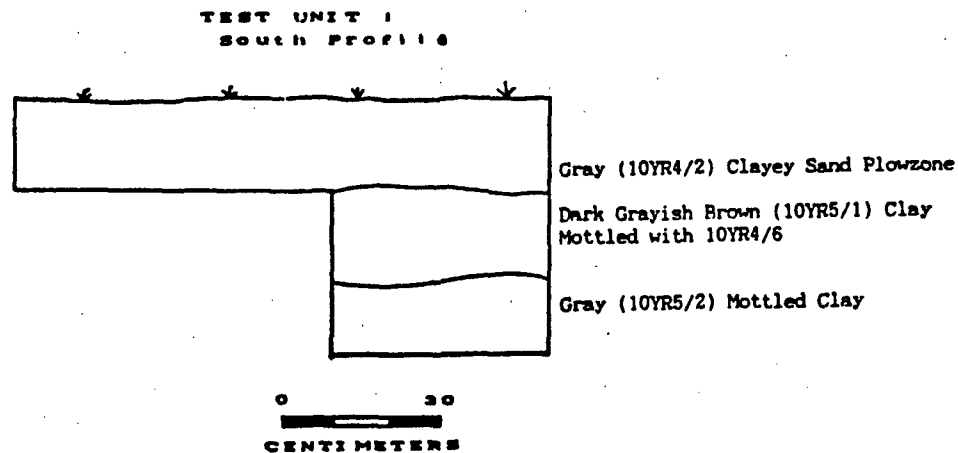


Figure 20. Test Unit 1, 23PM577.

NRHP Significance

23PM577 is very small with a low density of artifacts unassignable to any particular period. The deposits are contained in the plowzone. The underlying gleyed clays indicate flooding which would have made the location uninhabitable through part of the year. This makes it improbable that there are any subplowzone features. The lack of integrity and diagnostic artifacts offers a low research potential. In the opinion of MCRA this site is not significant in terms of Criterion d of the National Register of Historic Places.

Recommendation

No further archeological work is recommended at this site. Archeological clearance should be given this site.

23PM576 (LITHIC SCATTER)

This site is a very low density lithic scatter located on the same ridge as 23PM574. Its location was measured from the top bank of the ditch and found to be 350 feet from the ditch. 3PM576 is located outside the project area and will not be adversely affected by the ditch enlargement. No further work is recommended at this site as long as the work is restricted to the 300-foot-wide impact zone.

SUMMARY

Archeological significance testing at four archeological sites resulted in determining that none of these sites are significant in terms of the NRHP criteria for significance. One might speculate on the lack of significant sites in a 20 mile corridor. Much of this area had previously been surveyed by Keller (1983) who carried out an extensive analysis of this same problem. His

conclusion, which has been further supported by MCRA work in the region (Ditch 29, Belle Fountain, Blytheville) was that this area was part of the Big Lake Complex and was seasonally or permanently under water, making it non-conducive to terrestrial site formation activities.

CHAPTER 4

SIGNIFICANCE OF THE RESOURCES

by

Robert H. Lafferty III

This chapter discusses the nature of the NRHP concept of significance and how the specific criteria relate to the sites from this project.

THE NATURE OF SIGNIFICANCE

A significant cultural resource has a long history of legal actions which have defined archeological significance as it is used in the current regulations. Included are the Antiquities Act of 1906; the Reservoir Act of 1960, as amended; the National Historic Preservation Act of 1966, as amended; the National Environmental Policy Act of 1969; Executive Order 11593 (May 1971); and the Archaeological Resources Protection Act of 1979.

Federal Regulation 36CFR60.4 outlines the qualities that make cultural properties significant and eligible for nomination to the National Register of Historic Places (NRHP). These regulations state:

The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

(a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) That are associated with the lives of persons significant in our past; or

(c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That have yielded, or may be likely to yield, information important in prehistory or history. (*Federal Register* 1976:1595)

Sites significant and eligible for NRHP nomination must have intact deposits and a high degree of integrity of location, setting, feeling, and association. While these are not criteria for significance, they comprise a general precondition defined in the regulations (*Federal Register*

1976:1595). In some instances it can be waived if intact deposits of a particular study unit are not known or are known to be almost nonexistent. For example, in the Arkansas Ozarks, Sabo et al. (1982) explicitly included disturbed assemblages from the Archaic, Mississippi, and Woodland periods and virtually any Paleo-Indian/Dalton site as potentially significant, which suggests just how rare these undisturbed sites are in that region. Other highly disturbed sites, known to be representative of classes of sites with known undisturbed deposits, are likely to be non-significant; however, specific arguments might also waive this.

The temporal cut-off for significance is legally set at more than 50 years old. Again, this requirement can be waived if the resource is associated with someone of note or importance and is otherwise eligible under Criteria a, b, or c.

For a site to be archeologically significant (Criterion d) it must be shown to have data relevant to current research questions in an archeological region such as southeast Missouri (cf. Tainter and Lucas 1983 for comment and extensive reference of this discussion). In Missouri the most pressing research questions have been synthesized in the Master Plan for Archeological Resource Protection in Missouri (Weston and Weichman 1987) on a region-by-region basis.

This particular project area is in the Lower St. Francis/Lower Mississippi Study Unit. As with most North American regions, there are huge gaps in the data base.

Data gaps are rampant [sic] throughout the prehistory of this study unit, especially so in small sites of the later periods (e.g., Late Woodland and Mississippian). In all Woodland periods including the poorly understood Hopewell-like phase which lacks good dates and subsistence/settlement data, in all Archaic periods and site types, and in the good potential for Mastodon/man connections as evident by local collecting of Mastodon teeth near the rivers (Wright 1987:B-12-4).

The four sites tested in this project (23PM: 574, 575, 577, & 578) are small sites of the latter periods.

The Master Plan discussed those research questions and parameters of significance in need of immediate attention:

Significance in this study unit should be placed on sites and resources which will help delineate cultural phases from intact components and not from rich late prehistoric surface collections. Chronological controls are the most significant because of their absence in past archeological research. In situ functional evidence for settlement/subsistence and regional spatial and comparative data should be the top priority. Only surface collections which are scientifically sampled for spatial patterns should be considered because of the overwhelming predominance of unprovenienced collections which presently make up most of the archeological data (Wright 1987:B-12-5).

Specific research questions that apply to the sites in this report are:

4. What is [sic] the different subsistence and settlement patterns of various regional Mississippian phase? The best documented phase is Powers Fort but there are many more unidentified phases.

5. Woodland and Mississippian phases need to be accurately defined by a number of intact archeological components at different sites. Most of the so far identified phases are only tentatively established by test excavations and surface collections (Wright 1987:B-12-5).

Research priorities involve delineation of site types (i.e., especially small sites, intra-and inter-spatial and chronological comparative analysis), and functional analysis of in situ features from the Mississippian period. Equally important is to delineate the function [sic], spatial, and chronological relationships of all earlier time periods, especially, in cases where there exists intact components which can be radiometrically dated (Wright 1987:B-12-6).

Chronology construction and assemblage/phase definition still remain high priority activities and form relevant research questions for all prehistoric periods. In addition, as a result of poor preservation of organic remains in open field sites, only limited attention has been given to questions of paleo-environment, prehistoric food resources, non-food plant exploitation, and related problems. The nature of prehistoric lifeways during most prehistoric periods in southeast Missouri remain undefined.

ARTIFACT DENSITIES

One of the *de facto* criteria which must be considered in determining the ability of a site to contribute to knowledge of the past is artifact density. This is not to say that low density of surface scatters of artifacts are not important to understanding past adaptations because obviously they are in terms of what environments were being exploited; however, if artifact densities are too low then it will be very expensive to recover them, and it is unlikely that enough different classes will be included in the same unit to permit correlation of classes.

Site 3PM577 has an apparent artifact density of 20s artifact per cubic meter. If we assume that the artifacts are distributed evenly in the 225 meter site area and the plowzone is a uniform .15 m deep, then we have a total site volume of 34 cubic meters and a total of 675 artifacts.

Thirty-four artifacts were recovered on the 225 square meter surface of 23PM578. This works out to an average density of 0.151 artifacts per square meter. If we assume, for argument's sake, that we found all artifacts greater than a centimeter and that the artifacts are distributed equally and randomly throughout the plowzone, then 34 times 15 equals 510 artifacts in the whole site. However, we know that artifacts are not distributed uniformly over the site area. Concentric rings were overlaid on the site with the center at the test units. Table 10 presents the metric data of the real density of surface artifacts.

Table 10. Artifact Densities by 3 m Incremental Rings, 23PM577.

A	B	C		D	E	F
Circle	m2 of	Artifacts		Pz Artifact	Artifacts	m3
Diameter	ring	N	/m2	Density	C/m2 * 46.5	under
				B * C/m2 * 15	* m3	ring
3	7	3	.43	45	20	1
6	21	6	.29	91	40	3
9	34	7	.20	102	47	5
12	49	3	.06	44	20	7
15	63	1	.02	19	8	9
		20		301	135	27

Table 10 clearly indicates that there is decreasing artifact density toward the edges of the site (Column C: m2).

To convert surface densities to densities per cubic meter (subsurface densities), we must make an assumption. If we assume that the point-plotted artifacts represent the top 1 cm of the subsurface artifacts and that the artifacts are randomized in the plowzone, then it is a straight extrapolation of surface densities multiplied by depth of the plowzone to get subsurface densities (Column D). However, the test unit was placed in that part of the site with the highest density, yet this produced artifacts at a density of only 20 artifacts per cubic meter. This suggests that our one centimeter estimate is too high, by over 100%, and that to relate the surface densities to plowzone density requires a different procedure. Based on Test Unit 1, the correction formula appears to be:

Artifacts per cubic meter = Artifacts/m2 * 46.5 * cubic meters under circle.

This apparent constant of 46.5 was derived by dividing subsurface artifact density by surface density. I believe this is the most correct estimate of the total artifacts in the site: 135. This suggests that the point-plotted artifacts represent 25% of the assemblage.

The artifact density in the plowzone at 23PM578 is a bit more difficult to ascertain. If we continue our assumption that artifacts on the surface are systematically related to those in the plowzone, then we can compare the surface densities at 23PM577 with those at 23PM578 to determine the ratio of artifacts and use this same ratio to extrapolate to the plowzone. At 23PM578 14 artifacts were found on an estimated site area of 600 square meters. At 0.0233 artifacts per square meter, the artifact density of 23PM578 is only 15.4% of that on 23PM577 (or 23PM577 has 6.5 times the artifact density of 23PM578). $.154 * 20$ equals 3.1 artifacts per cubic meter which is the expected artifact density at 23PM578. Extrapolating this density of 23PM578 suggests that there are 463 artifacts contained in the cultural bearing matrix, assuming even distribution throughout the matrix. Trying to apply the circle to 23PM577 proved futile. Artifacts did not

produce decreasing densities from the center of the scatter at CC2. This suggests that 23PM578 is more highly disturbed than 23PM577. It also suggests that the dispersion was originally much smaller than it currently is and that there are probably many fewer artifacts than 23PM578 suggested above, in this analysis probably on the order of magnitude of 1-200.

The artifact densities on site 23PM574 was high enough that MCRA performed a controlled surface collection; but even so, it was very low. Seventy-five of the units contained no artifacts. The overall artifact density of units with artifacts was only 0.1 artifact per square meter. The highest artifact density was 2.2 artifacts per square meter, which is a respectable density, but this was obtained only in one unit. In the core area of the site, artifact densities averaged 0.5 artifacts per square meter which is a relatively low artifact density.

SITE DEFINITION AND INTEGRITY

The definition of sites 23PM577 and 23PM578 is based on point-plotted artifacts. In both cases there was an obvious concentration of artifacts with a much lower density scattered beyond the core area. In Chapter 3 we pointed out that this pattern of displacement is relatable to plowing and this has been scientifically documented in other studies (e.g., Lewarch and O'Brien 1981, Rudolph 1977). On both sites, the direction of the tilling coincided with the direction of peripheral artifacts in respect to the core area. Therefore, if the site is on the surface then the highest probability of intact deposits are in the highest density of the artifact scatter.

The excavation levels on these two sites indicated that this was the case. The subplowzone soils on both sites are gleyed clays without artifacts. On site 23PM577, three artifacts were recovered in the plowzone and none below. This is an artifact density of 20 artifacts per cubic meter in the most dense part of the site. On 23PM578 no artifacts were found in the test unit or control columns which suggests an artifact density of less than nine artifacts per cubic meter in the plowzone. The significance of gleyed clay underlying these sites is crucial to our argument that these sites are not significant in terms of the NRHP criteria.

Gleyed soils are chemically reduced by processes which remove oxygen. In the Lower Mississippi Valley they develop under bodies of standing water such as swamps. In many cases these waters are seasonal, allowing non-canoe-borne use of an area by humans during parts of the year. The fact that these sites are on such soils indicates that investing time to dig subplowzone features for storage of foods is not logical because during part of the year they will be under water. Construction of houses under such conditions is also contrary to logic for the same reasons. These clay soils are also not suitable to Stone Age cultivation (cf. Lewis 1974; Lafferty 1977; Larson 1972). It is unlikely that these sites functioned as farmsteads. On this basis we believe that there is virtually no chance that there are subplowzone features on these two sites. The implication is that the site is totally contained in the thoroughly disturbed plowzone. The only way to tell for sure if there are features present is to strip off the plowzone.

23PM574 is a different kind of assemblage and site because it has pottery and diagnostic artifacts from two different periods. Again the site was on gleyed soils, but not so highly gleyed as at the two previously discussed sites. All artifacts were recovered in the plowzone. The landowner indicated that the site has been subsoiled every one of the past 10 years, and definite plowscars, to a depth of 70 cm, were documented in the test unit. In addition, the "drying" cracks (Figure 11) are filled-in plowscars from older site subsoiling.

23PM575 was represented by two sherds found on the spoil pile, and no artifacts or intact deposits were present in the control columns or test unit excavated on the site. Again the underlying substrata was gleyed clay which indicated a low probability of subplowzone deposits, especially considering that the artifacts from 23PM574, which is on the same soil formation, are from the surface.

Site 23PM574 also has every indication of being a surface deposit; however, the presence of pottery raises the possibility that there could be subplowzone features. However, we believe that if they were present, they have been adversely affected by the subsoiling which was quite obvious in our test units. Therefore, even if this undemonstrated possibility is true, we believe that the archeological integrity of the site has been severely damaged to such a extent that any dated features would be highly questionable. It is MCRA's opinion that this site is not significant in terms of the National Register of Historic Places criteria.

Site 23PM575 is an enigma. All of our work failed to disclose the source of the two sherds found on the spoil pile. On the face of this, we cannot demonstrate that there is a significant site at this location. However, there remains the disturbing possibility that the site is buried under the spoil pile.

In summary, our data strongly indicate that all four sites lack integrity and that very little other than more artifacts from the disturbed plowzone would be recovered through scientific excavation. These sites do not have deposits which would contribute to the development of chronology because they do not have intact deposits which could be dated. Moreover on sites 23PM577 and 23PM578 we have recovered a statistically significant part of the assemblage in a scientific collection. It is the opinion of MCRA that none of these sites are significant in terms of the National Register of Historic Places criteria.

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APPENDIX A
SCOPE OF WORK

Delivery Order Number 1
Mid-Continental Research Associates
Contract No. DACW66-89-D-0053

Scope of Work

Main and New Franklin Ditch, New Franklin Ditch and Steel Bypass Intensive Survey, site testing, and report of the Ditch right-of-way; and Birds Point-New Madrid Floodway Intensive Survey, without site testing, within the known disturbance area.

General. Work to be undertaken under this Delivery Order consists of a background and literature search, an intensive survey for, and testing of cultural resources along the Main and New Franklin Ditch, New Franklin Ditch and Steel Bypass, Pemiscot County; and an intensive survey, without testing, within the Birds Point-New Madrid Floodway known disturbance area, Mississippi County, Missouri.

Specific Tasks.

a. The Contractor shall familiarize himself with all available literature related to the project area.

b. Main and New Franklin Ditch, New Franklin Ditch and Steel Bypass. The Contractor shall conduct a 100% intensive survey of the project areas. Encountered prehistoric or historic cultural resources will be surface collected and tested. Artifacts will be analyzed. A draft and final report will be submitted.

c. Birds Point-New Madrid Floodway. The Contractor shall conduct a 100% intensive survey of the project area. Encountered prehistoric or historic cultural resources will be located on a topographic map so they can be returned to and tested at a later date. A rough boundary for each resource shall be determined. At the completion of the survey, a summary report will be submitted.

d. The project areas are as follows:

1. Main and New Franklin Ditch - The project area begins at the junction of Bell Fountain Ditch and Main Ditch No. 6, and extends northeastward approximately 4-5 miles to the junction of New Franklin Ditch and Steel Bypass at the town of Cooter. See attached map and bluelines. Right-of-way to be surveyed on the right bank extends 300 feet landward from top bank. Approximately 164 acres will be surveyed.

2. New Franklin Ditch - The project area begins ^{North(?)} south of Cooter at the junction of New Franklin and Main Ditch No. 6, and extends along New Franklin Ditch approximately 4.45 miles in the northeast direction. See attached map and bluelines. Right-of-way to be surveyed on the right bank extends 300 feet landward from top bank. On the left bank, the survey area starts 250 feet landward from top bank and extends 100 feet landward. Approximately 220 acres will be surveyed.

3. Steel Bypass - The project begins just northeast of the town of Cooter at the intersection of Main Ditch No. 5, New Franklin Ditch and Ditch No. 3, and extends generally northward approximately 4.0 miles to terminate at the junction of the St. Louis/San Francisco Railroad and Main Ditch No. 6. From the beginning of the project to the intersection of Missouri Highway 164, and the ditch (approximately 12,500 feet) only the right descending bank will be surveyed. The right-of-way will be 300 feet from top bank landward. From the ditch/highway 164 intersection to the railroad/Main Ditch No. 6 intersection (approximately 8,500 feet) the right-of-way extends 300 feet either side of the centerline. Approximately 204 acres will be surveyed.

4. At all bridge locations (see attached maps and bluelines) the right-of-way will be expanded 50 feet on both sides of the bridge, and both sides of the ditch parallel to the ditch, and 50 feet beyond the right-of-way away from the bridge on both sides. Approximately 4 acres will be surveyed.

5. A total of approximately 592 acres will be surveyed in this proposed project area.

6. Birds Point-New Madrid Floodway - The project area extends approximately one mile North and two miles South (along the levee) of the Tom Bird Blue Hole.

Delivery Order Number 1
Mid-Continental Research Associates
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Scope of Work

Main and New Franklin Ditch, New Franklin Ditch and Steel Bypass Intensive Survey, site testing, and report of the Ditch right-of-way; and Birds Point-New Madrid Floodway Intensive Survey, without site testing, within the known disturbance area.

General. Work to be undertaken under this Delivery Order consists of a background and literature search, an intensive survey for, and testing of cultural resources along the Main and New Franklin Ditch, New Franklin Ditch and Steel Bypass, Pemiscot County; and an intensive survey, without testing, within the Birds Point-New Madrid Floodway known disturbance area, Mississippi County, Missouri.

Specific Tasks.

a. The Contractor shall familiarize himself with all available literature related to the project area.

b. Main and New Franklin Ditch, New Franklin Ditch and Steel Bypass. The Contractor shall conduct a 100% intensive survey of the project areas. Encountered prehistoric or historic cultural resources will be surface collected and tested. Artifacts will be analyzed. A draft and final report will be submitted.

c. Birds Point-New Madrid Floodway. The Contractor shall conduct a 100% intensive survey of the project area. Encountered prehistoric or historic cultural resources will be located on a topographic map so they can be returned to and tested at a later date. A rough boundary for each resource shall be determined. At the completion of the survey, a summary report will be submitted.

d. The project areas are as follows:

and one mile landward on the western side of the levee. The project area contains approximately 1,920 acres. Survey is to extend from the levee toe or man-made berm, westward to the project boundary. See attached maps for project area and location.

e. All activities under this Deliver Order shall be undertaken in strict compliance with Contract No. DACW66-89-D-0053, which is included and made a part of this Delivery Order.

Schedule. All work under this delivery order shall be completed within the following schedule.

a. <u>New Franklin & Steel Bypass</u>	<u>From Receipt of Delivery Order No. 1</u>
Field work	21 days
Summary Report	25 days
Artifact analysis	34 days
Draft Report submittal	41 days
Final Report submittal	91 days
b. <u>Birds Point-New Madrid Flood</u>	<u>From Receipt of Delivery Order No. 1</u>
Field work	48 days
Summary report	53 days

c. Completion time may be extended on a day to day basis, at no extra cost to the Government, at the Contracting Officer's discretion.

d. Should hours listed in attached DD Form 1155 be greater than those necessary to complete tasks described in this Delivery Order. The Delivery Order will be modified.